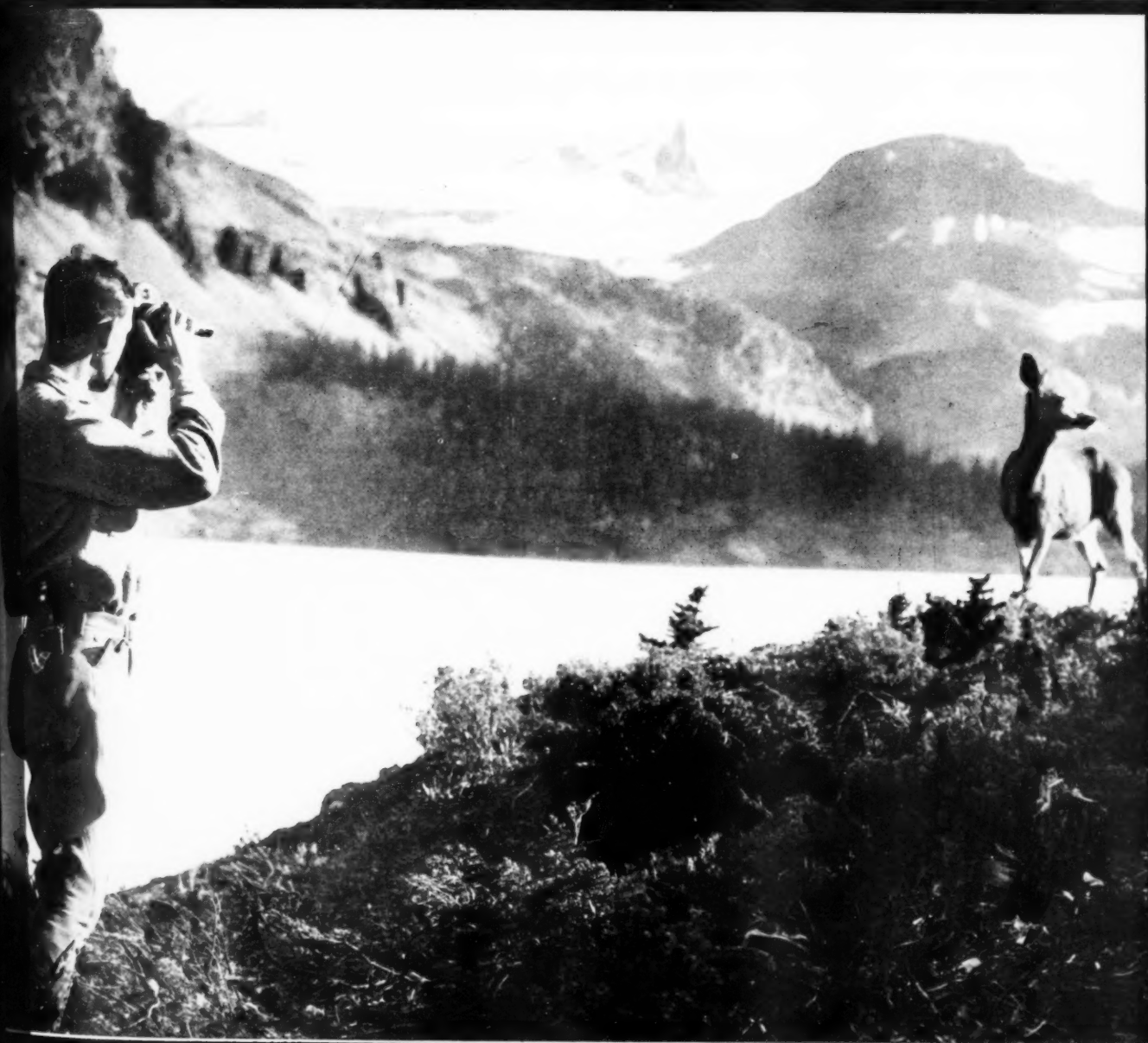


AMERICAN FORESTS



JULY 1937

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NEXT MONTH

Going to California? Then by all means read Don Bloch's article in the August issue on the State's great system of recreational forests, particularly along the coast and in the southern part of the State. It is a great story; but more than that, it will help you plan a real California vacation.

"Conservation and the Lumberjack" is the title of a timely and significant article by Governor Elmer A. Benson, of Minnesota, in this issue.

Timely and significant also is "The Pulp Industry and Forestry in the South," by Earl W. Tinker, assistant chief of the Forest Service.

Stewart Holbrook returns to **AMERICAN FORESTS** in the August issue with a dramatic forest fire story—written in the best Holbrook style. The highly important question of nature sanctuaries will be presented in an article by H. P. K. Agersborg, while E. M. Davis will tell of building "Wooden Mattresses for Old Man River." John F. Preston, of the Soil Conservation Service, will write of the forester's part in soil conservation.

The pictorial feature of the month will deal with the cool and delightful subject of little waters and waterfalls in the National Forests.

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The Editors are not responsible for loss or injury of manuscripts and photographs while in their possession or in transit. All manuscripts should be accompanied by return postage. The Editors are not responsible for views expressed in signed articles. . . . Notice of change of address for **AMERICAN FORESTS** should be received by the tenth of the month preceding issue.

Member A. B. C.

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B. L. Brown

■ During the next three months recreation in a great variety of outdoor forms—fishing, camping, hiking, motoring, canoeing, horseback riding—will be the uppermost activity in the forests of the country. So great has been the trend in recent years to the use of the forests for physical and spiritual enjoyment that recreation has become a major problem in the administration and development of public forest properties.

This is especially true of the National Forests. Created for the primary purpose of timber growing and water conservation some thirty years ago when the use of the lands for recreation was practically negligible, these public forests today are visited by over 70,000,000 people annually, at least one-half of whom are in search of outdoor recreation. This great influx of people in the forest during the summer has created an acute situation that constantly tends to divert and to throw into confusion the major objectives of National Forest administration. Congress has never clearly de-

RECREATION

fined the legal status of recreation in the National Forests or provided adequate fiscal sanction for its integrated use. The result is the Forest Service has had to deal with it as a sort of stepchild left upon its doorstep.

For more than ten years The American Forestry Association has urged that recreation be given legal recognition as a National Forest use and coordinated with other uses in accordance with its public benefits. Its position was made clear in a resolution passed by the Board in 1932, reading as follows:

"In recognition of the need of developing and making available for public use and enjoyment the recreational, educational, and related values of the National Forests, The American Forestry Association urges the early passage of an act authorizing the Secretary of Agriculture to undertake studies and activities that will make possible such development without jeopardizing the proper conservation of the economic and wildlife resources of the forest."

Note—In this space is presented each month the Association's policy with respect to timely phases of conservation.

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THE EDITOR'S LOG

NO MATTER what the vicissitudes of life, nor how great its triumphs, deep sentiment always attaches to the place of our birth. And to "come home" after following distant trails stirs the best that is in men's souls.

So it was with The American Forestry Association, whose members gathered in Cincinnati on May 31 for their 1937 annual meeting. For there on the banks of the Ohio River the Association was in the land of its birth.

There was inspiration in the consciousness that we were in the city where more than half a century ago the Association had its active beginning and where once lived its founding fathers.

They were Ohio men. First among them was Dr. John A. Warder, during the seventies a lone crusader for public sentiment in behalf of forest protection and tree planting. It was he who in 1875 succeeded in getting together a small group in Chicago and in organizing an American Forestry Association.

Seven years later, Judge Warren Higley, an eminent jurist of Cincinnati, becoming interested in forestry as a result of a talk with Richard Baron Von Steuben, an "Oberforster" in the Prussian Forestry Service, was instrumental in organizing The American Forest Congress in Cincinnati in April, 1882. These two meetings marked the beginning of The American Forestry Association and of organized public interest in forest protection and use in this country.

There was inspiration in the environment of this American Forest Congress of 1882. It was no small affair. Indeed, it appears to have been the most colorful and the most largely attended conservation gathering in the history of the United States. The following extract is taken from a report of the meeting published in the May 13, 1882, issue of *Frank Leslie's Illustrated Newspaper*:

"The Forestry Congress, which opened at Cincinnati, April 25th, attracted a large attendance of prominent men from all parts of the country and cannot fail to give a great impetus to the movement for the preservation of our forests.

"The most interesting feature of the Congress was Arbor Day, April 27, when 25,000 persons gathered in Eden Park to witness the ceremonies attending the planting of trees in memory of many famous men. The public schools were closed and thousands of children were among the spectators. A procession marched from the city to the park and as it entered the ground a salute of thirteen guns was fired.

"The first tree planted was a *Quercus Lyrata*, a species of white oak, in memory of Washington, and George Washington, of Cincinnati, the nearest living relative of the first President, delivered the address."

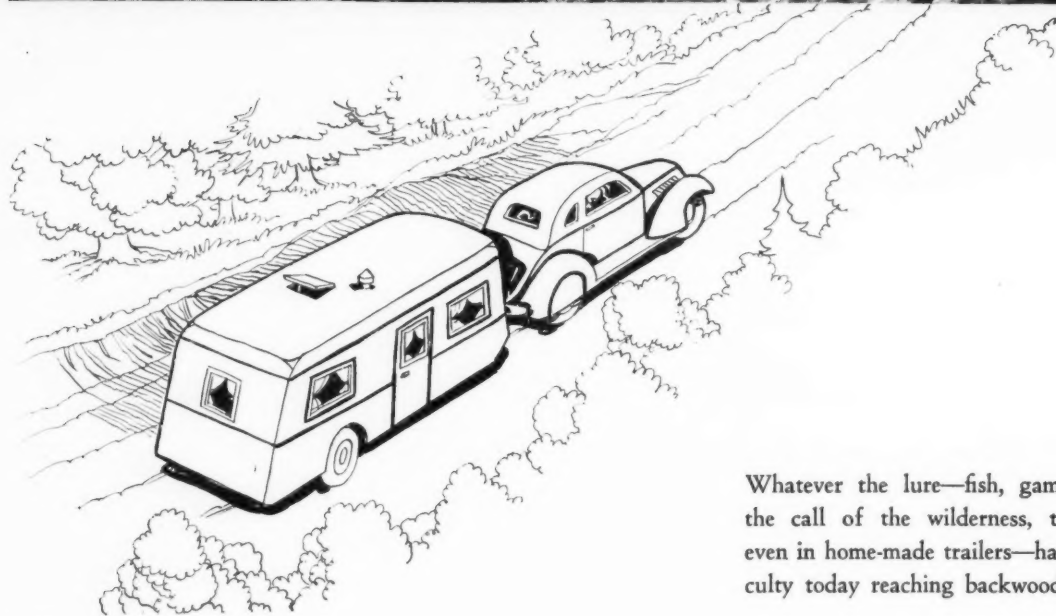
The meeting lasted five days. Its sessions were divided between tree plantings in Eden Park, where trees were planted in memory of the Presidents from Washington down, and more serious-minded discussions in the Old Music Hall, where public sentiment was first crystallized for the establishment of forest schools and forest experiment stations, the creation of state forestry commissions, the passage of laws to control forest fires and the gathering and diffusion of knowledge regarding the care and influence of forests.

There was inspiration in the thought that this meeting laid the first cornerstone upon which much of our forestry in America has since been built; and in the fact that this grove of trees in Eden Park—known far and wide—stands as a living monument to the work of the American Forest Congress. Each tree bears the name of a President of our country. At the head of the grove is a sandstone marker bearing the following inscription: "Presidential Grove, planted and dedicated to the memory of the Presidents of the United States by the Forestry Congress, Cincinnati, April 27, 1882."



Ora Foster

Editor.

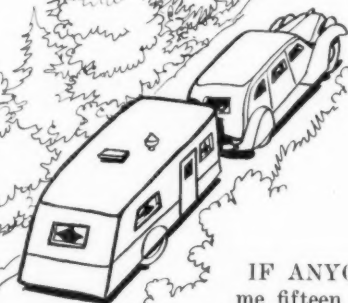


Whatever the lure—fish, game, or just the call of the wilderness, trailerites—even in home-made trailers—have no difficulty today reaching backwoods territory

BACKWOODS TRAILIN'

By LEO A. LUTTRINGER, JR.

*"Trailer trailin' is here to stay,
There yesterday, here today."*



IF ANYONE had told me fifteen years ago that I would live to see a gang of full-fledged big game hunters comfortably ensconced in a house on wheels in the very heart of what was then a well-nigh impenetrable wilderness, or follow a line of campmobiles to my "private" fishing stream, I would have said they were "teched in the head." For that matter, I would probably have said the same thing about our streamlined airplanes, automobiles and locomotives.

When I first laid eyes on that motor driven super-structure up there in the Clearfield County mountains of Pennsylvania I could only stare in amazement. There I was, a dyed in the wool big game hunter—or so I thought—looking at Mr. Modern Practicability's gift to the outdoors man.

While I stood admiring the layout, I was lustily hailed and, turning, saw someone gesticulating from one of the windows of that rubber tired mammoth. Sensing hospitality, as well as an opportunity to satisfy a burning curiosity, I was soon inside shaking hands with half a dozen typically garbed nimrods. I recall, now that I think of it, the syncopating melody of a jazz band emanating from a portable radio, the whereabouts of which I couldn't locate, despite the fact that I was all eyes and ears.

My enthusiasm must have reached trance-like proportions, for I actually started when one of my new found friends asked: "How do you like her, buddy?"

"Swe-e-e-l-l!" I ejaculated. "Swell!"

Without exaggerating it was the keenest layout I had ever seen. There were eight double bunks, all advantageously laid out to conserve space, with lockers under the "lowers" stowing blankets, pots, pans, duffel bags, medicine kit and other miscellaneous equipment and supplies. A compact cooking range stood at one end with a chimney jutting out the roof. There were also several gasoline lamps, racks for guns, large containers for water—everything, in fact.

I couldn't help contrast this comfortably equipped, practically constructed trailer with the resident camps of various types I had passed earlier in the day. To some it may not have seemed superior. To me it was. It certainly had it all over a tented outfit I had visited a few hours before, which though probably just as well equipped inside, was after all a canvas home, and had to be put up and taken down every time they wanted to move.

From many angles this gigantic trailer-camp was comparable even to some of the more elaborate cabins which have sprung up in such profusion since the advent of good roads through forest territory.

These roads are numerous and they often penetrate to the innermost recesses of Pennsylvania's wilderness areas. Some are closed to public travel to insure better game and fire protection, and wisely so. Many are open to vehicular traffic, however, and on these the trailerites have no difficulty reaching good hunting territory.

Several days after this first view of a camp on wheels, I ran across three more wheeled outfits in Lyeoming County. One of them looked like a reconstructed version of a typical interstate bus. This crowd hailed from Ohio, and had hunted for several days without any luck. They were full of enthusiasm, nevertheless, and planned to try again.

One of the members told me they had used their outfit for several years. It was particularly advantageous, he said, in that they could use it to visit their favorite hunting ground in the fall and then set it up alongside their favorite fishing stream in the summer.

One of the cleverest arrangements was their method of providing sleeping quarters. The sides were made with push-out leaves, hinged at the top, thus forming a canopy wherein the bunks were placed. These compartments were readily folded into the body of the truck when on the road.

This unique arrangement was so devised to allow more space in the body of the truck. It held a small stove, a small portable table, and several folding chairs. Shelves lined the walls on both sides and the front. On these were kept odds and



The Covered Wagon Company

Readily adaptable is the trailer camp on wheels—it can so easily be moved to favorite hunting grounds in the fall or set up alongside favorite fishing streams in summer.

ends such as cards, shells, tobacco, pipes, books and other miscellaneous articles. On the rear wall, behind the stove, hung all the cooking utensils.

When I saw the second outfit I thought I'd collapse from sheer amazement. It was a whale of a thing, thirty-eight feet long, eight feet wide and eight feet high. It was also drawn by a truck. How it ever managed to get around corners I can't figure out, but it did.

The whole thing resembled a railway caboose. It had four windows on each side and a door in front and back. The stove, a coal burner, was also in the back. Above the stove, along one side was a shelf suspended from the ceiling whereon were kept crocks, canned and jarred provisions and other food supplies.

Pots and pans hung from the walls. Along the same side was a built-in sink with cupboards below in which other cooking utensils were stored. Next was a small gasoline stove for heating water quickly.

On the other side, in front, were four iron triple-decker bunks with springs and mattresses, a large table, several chairs and benches, a coal box, a chest for bed clothing, a radio, and an auxiliary electric generator.

This modern campmobile was electrically lighted and I learned that its owner spent all last summer building it. He said he expects to set it up along one of Lycoming County's fishing streams this summer. Fourteen men occupied this wheeled monster during the past season, five of whom bagged splendid bucks.

The third outfit was the crudest of all; nevertheless it was every bit as practical. It was a large

barn-like structure with wooden sides and canvas top, and was also drawn by a truck. It contained a number of bunks, and a cooking stove situated in the rear. A stove pipe protruded through a canvas drop which hung at the rear entrance. The end gate was constructed to form a porch when opened.

I hung around with this outfit for awhile to see what I could see. I was amazed to hear of the many places they had been, and the things they had seen and done—all made possible through the use of "Big Bertha," as they so fittingly called their large transport.

As I started homeward I did a little summing up. Within the course of a few days I had seen four striking examples of modernized transportation applied to a sport which is growing in popularity every year. They were, of course, home-made jobs, but the idea was there. It naturally brings the hunter and fisherman to realize the possibilities of such a convenience and he will be looking into the factory-built jobs. He will want to see what he can buy, ready made, to answer this need. And, I am told, several manufacturers are now offering trailers built especially for hunting parties, but both demand and supply are still in their infancy.

Millions of men and women throughout the United States break the bonds of business anxiety, industrial toil, and professional strain in order to spend a few days each year fishing or in the pursuit of big game. Because of this ever-growing army of outdoor enthusiasts it becomes increasingly difficult for many of them to find ample lodging facilities near their favorite haunts. To people such as these the trailer camp is a godsend.

They have no preliminary arrangements to make, no cabins to build, no tents to pitch. They can pile in when they are ready and off they go. They are under no obligations to anyone but themselves and, as the saying goes: "They can eat their cake and have it too."

As an example, take the party from Ohio which I previously mentioned. They figured, and rightly so, that it would be poor economy for them to go to the expense of leasing a camp site, and building and equipping a cabin just to spend a few days deer hunting in neighboring Pennsylvania. Some of those boys liked to hunt quail in the Carolinas, others talked of trying for moose up in Maine. Think what wonderful possibilities their snug, portable cabin held for them.

And when it comes down to the expense I'll venture to say they did not put half the money in their outfit that most camp hunters do. The motor license itself probably doesn't cost them any more per year than the permanent camp owner pays for a lease. Gas and oil no doubt run a little higher. But even then the gang's all traveling together and naturally split this cost. If they had to travel a couple of hundred miles in their own cars their expense would be doubled, perhaps tripled.

No matter which way you look at it, the trailer, or shall we call it campmobile, has the edge on the permanent camp, especially for the out-of-stater. You jump in the old bus, reach your destination, have your fun, and hit tracks for home. When you get there you run her in her "hangar," remove the things you don't want to leave in it, and you're through.

You don't have to worry about a cabin stuck up in the mountains a couple of hundred miles away—whether someone will break in and steal this or that—whether the porcupines will chew the floor out of it—or whether it will go up in smoke as a result of a forest fire. These are all possibilities, every one of them. How good it is to feel that everything is safe and sound, all set for another ramble.

I do not for a moment want my readers to get the idea that I am putting my finger on the good old hunting camp. I'm not. Without them our forests would not portend the glory and glamour of the chase. What I am trying to say, however, is the fact that for some of the six million nimrods who go afield annually in the United States, the trailer is by far the most economical and practical transportation and quarters.

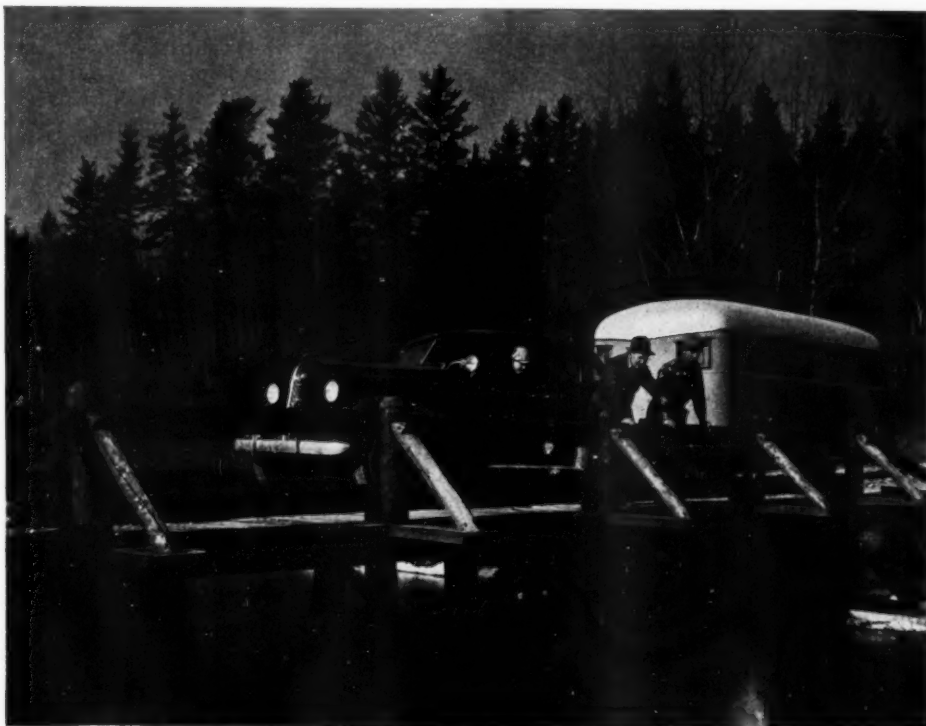
And for the fellow who likes to do a little fishing here and a little fishing there, nothing can compete with the so-called camp-on-wheels.

I am pleasantly reminded of that first day of the trout season which all anglers dream of for months,—the real first season's fishing, when the angler sets forth to try his skill against those cleverest of all finny inhabitants of our mountain and brook streams, the brook, rainbow and brown trout.

Having chosen a spot which I felt sure not many others knew about, I was quite bewildered to find myself in a long line of traffic, all apparently fishermen and headed to the very stream I had selected for some "private" fishing. In this line there were quite a few campmobiles.

When I finally arrived at the stream I saw many more of these trailers (*Continuing on page 365*)

The nimrod halts his campmobile en route to try out a particularly alluring pool



The Covered Wagon Company

STATE OPPORTUNITY IN FOREST CONSERVATION

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•
• By JOHN B. WOODS

THE Forest Conservation Conference of 1937 accomplished certain important results. Representatives of private forest ownership and industry, of legally constituted State and Federal agencies, and of the general public sat down together and discussed numerous questions which always have been highly controversial. A national forest conservation program was formulated. Accredited spokesmen for a dozen regional lumber trade associations—whose members produce two-thirds of the nation's lumber output—reaffirmed their intention to participate in such a program, which they believe can be carried out by cooperation of Federal, State and private agencies.

A fundamental consideration, running through all discussions, responsible indeed for calling such a conference, was the knowledge that something must be done, on a nation-wide scale, to assure permanency of our forests and their dependent activities. To the industry group sponsoring this meeting, it appeared desirable to deal first with the broad question of *what* can be done, with the tools already at hand. In the exploration of this field, this group had the generous aid of outstanding men, experienced in government, State as well as Federal, in education and public relations, in agriculture and in other fields of forest industry. That the Conference, so constituted, brought forth a comprehensive program of necessary and desirable action is no less satisfying because it was to be expected.

The principle upon which the Conference functioned was to set up as much of a program as could be agreed upon at this time, by representatives of all participating groups. The program thus agreed upon recommends action by several groups: the lumber industry, other forest industries, small woodland owners and operators, State administrative agencies and State legislatures, Federal administrative agencies and the Congress, and back of all these the general public. Agreement as to what should be done, and reasonably can be done, was no small accomplishment. Yet there was available for guidance a record of progress toward objectives set up by a previous Conference in early 1934.

This record, fresh in the minds of men who had worked at the task, showed clearly that Rules of Forest Practice, locally devised and locally administered, were workable and contained the wherewithal to arrest the so-called destructive phase of forest harvesting. It showed equally clearly that application of those

rules to all operations from smallest to largest was necessary if the gains were to be held. In those States where local forest authority worked wholeheartedly with enlightened industry groups, the record showed that State law could bring recalcitrants into line, and that State and Federal cooperation might become motivating forces strong enough to break down long-established defeatism. But it showed also that the obstacles to continued forest ownership and long-range planning are real, and in many localities no nearer removal than they were in 1934 or 1920. Public authority might remove them by legislative action safely within the bounds of public welfare, but in the Congress and in most legislatures the action has been withheld.

It cannot be fairly claimed that the voluntary cooperative approach has been given a thorough trial. Neither should it be claimed that voluntary action by industry has succeeded in putting the 1934 program ahead as rapidly as was needed. The task was too great and the facilities for awakening the interest of all operators and the general public were too limited. Experience shows, nevertheless, that when the several groups, Federal, State and industry, have joined locally in constructive effort, public opinion has been awakened and focussed upon the problem with sufficient intensity to obtain the beginnings of helpful legislation. Such accomplishments are promising. They suggest that the need is not for new sweeping and drastic regulatory legislation, but for authority and funds to give the cooperative method a real, nation-wide trial.

The elements of such a cooperative method are simple. There must be willingness of representatives of all interested groups to collaborate. Industry must be determined, and active, in its compliance with the program adopted. State authority must help to test and improve the provisions whereby progress is made. When proved by experience, such provisions should be enacted into State law. Federal authority must exercise leadership by managing public lands so as to promote the program and by expending public funds in ways which will tend to establish and maintain high standards of forest management and protection. Possibly the most important need of all, because it is pre-requisite to securing legislative action, is to inform the public as to its stake in forestry, including its obligations.

In the absence of specific recommendations for regulation of private forest operations by Fed-

eral or State governments, and in view of the detailed proposals for carrying out a truly cooperative program, it is reasonable to infer that the Conference intended to declare its faith in the latter method. I take that decision to indicate not so much a determination to resist regulation, as an honest desire to avoid signing a blank cheque.

Referring to an important forest region, with which the writer is well acquainted—and in such a discussion it probably is important to stay within the boundaries of first-hand information—the statement can be made that organized industry has supported and frequently has initiated State legislation to regulate forest practices. The declared policy of the West Coast Lumbermen's Association and the Pacific Northwest Loggers Association, is as follows: "Legislatures should enact into law the provisions contained in the Rules of Forest Practice as formulated by industries of the State, where and when these may properly be the subject of legislation."

There stands now upon the statute books of Oregon and Washington much of the substance of the forest conservation program of 1934, including, of course, practically everything found in the Forest Practice Rules then formulated under Article X of the Lumber Code. It is true that both States had fairly comprehensive forest fire laws before 1934. It is true, also, that the Tillamook fire of 1933 served to arouse public opinion in advance of the Code. But the fire protection laws of both States have been immeasurably strengthened within the past three years. The length of statutory fire seasons has been extended. Authority to close logging operations during periods of high hazard has been provided. Both States have begun the establishment of important systems of State Forests, by purchase as well as by the re-capture of forfeited tax-delinquent lands, and with the essential authority to sell or exchange lands where desirable to consolidate public or private holdings. Both States have taken tentative steps in land classification for use. In both States preparatory work has been done for adding to existing preferential reforestation land tax systems provisions for dealing more equitably with taxation upon reserves of mature timber.

In working out these improvements, there has been cooperation of private, State and Federal representatives. Federal men have sat with industry groups, have criticised freely and have been criticised in turn. State men have done likewise and have worked closely with industry without impairing their high public usefulness. In fact, they freely acknowledge that the determined efforts of organized industry have aided their administration. Slash disposal laws, affecting all land owners who cut trees, were enacted years ago; it is now becoming feasible to enforce them. Both Legislatures early in

1937 increased greatly their appropriations for forestry work. These are monuments to co-operation.

It is important to note that the method used in these two States is the old one of trial and error. Forest Practice Rules have been tested in the woods before they have been cast in the mold of State law. One very important forest practice provision remains to be perfected. Although admittedly fire protection, including snag and slash disposal, is our most important requisite for regeneration, there are many operations where this is not enough to assure prompt restocking of cutover areas. Reliable seed sources must be provided. Staggered settings, selective logging, seed trees, seed blocks, broadcast seeding, outplanting; all have their places and their problems of cost and efficacy. No agency has found the answer for the Douglas fir region, either in National Forest sale areas or upon private lands, but beginnings have been made and will be extended.

The record would not be complete without mention of Federal contributions. The C.C.C. Camps have aroused local interest in forestry and have initiated a great deal of valuable basic forestry work, including permanent improvements, insect and disease control, fire suppression, and the like. Clarke-McNary Law administration, direct and reciprocal fire protection, forest research with its many ramifications, and the counsel of experienced men, have been contributed by the permanent Federal agencies. These are practical aids which indicate Federal opportunity. They are not invalidated by misunderstandings which occasionally have grown out of unfortunate handling of other Federal activities, such as land acquisition, public timber disposal and publicity.

The *quid pro quo* principle is fairly applicable to forest legislation. This has been demonstrated by the Clarke-McNary Law. Failure under that Law promptly to effect nation-wide, uniformly adequate forest protection systems may be charged to wide variation in physical conditions, public indifference amounting often to active hostility, and niggardly Federal appropriations. Yet it is extremely doubtful that any other sort of Federal legislation, aimed at the same result, would have accomplished so much. This Law contemplates that beneficiary States shall set up and maintain satisfactory fire protection standards. The Federal Congress might appropriate funds to be used to accomplish other purposes in a similar manner. Forest acquisition and forest credits offer two fields wherein Federal influence plus funds might accomplish not only the improvement of day by day practices but the application of the sustained yield principle on private lands.

State authority might properly make use of the same formula. The State might offer to private owners equitable taxation and adequate forest protection in (Continuing on page 362)



Above—A fine catch of Michigan grayling (photograph by William B. Mershon). Below—The Otter River—in which the dying race of grayling made its last stand

SOMEWHERE beyond the threshold of extinction, toward which man has been crowding the wildlife of the North American continent since the first gun was fired and the first net lifted along the Atlantic seaboard, the passenger pigeon, the heath hen, the great auk and others of that shadowy host are welcoming a newcomer to their ghostly ranks.

This time it is a fish that enlists in that historic company of the exterminated. A great and gallant fish, a game, hard fighting dweller of the white swift water, that fifty years ago made fa-

A GALLANT FISH PASSES

By BEN EAST

With photographs by the author

mous the rivers of his limited range among all the fraternity of reel and rod.

The Michigan grayling, *Thymallus Tricolor*, is gone forever from the earth, or so nearly so that all hope of preserving him may as well be abandoned.

Once he was abundant, this flower of fishes, in the Pere Marquette, the Manistee, the AuSable, the Pine, Boardman, the Jordan and many

another northern Michigan river. Oddly enough, he made his last stand in the Otter, in Houghton County, in the Upper Peninsula of the State, the only river north of the Straits of Mackinac in which he is known ever to have dwelt.

Michigan did not watch him pass without a struggle. The efforts of the State to propagate its famous grayling go back to the spring of 1878, when the first expedition to take a stock of these fish for breeding purposes visited the Manistee River.

Michigan had embarked on a fish propagation program only five years before, and most of the

emphasis was being placed on the rearing of white-fish. At that time the Michigan grayling, known locally in the early days as the Manistee herring or garpin, teemed in countless streams throughout the northern half of the Lower Peninsula.

The State expedition returned with 1,500 fish. A few of these were planted in lakes and rivers far to the south of their natural range. The rest went into the State hatchery to serve as breeding stock. But even with such an auspicious beginning the result was complete failure, a forecast of the many other failures that were to follow.

In the decades immediately after, the Michigan grayling brought to the State its chief claim to fame among anglers. It was taken in vast numbers. It was a fish of high sporting qualities, and it figured prominently in the fishing literature of the day. Outdoor magazines gave much attention to Michigan grayling fishing and even railroad pamphlets sang its praises as a means of enticing travelers into the grayling country.

What caused the rapid disappearance and finally the complete extinction over most of its range of this isolated member of the grayling family, in the decades immediately before and after 1900, no one can say with certainty. Various theories have been advanced by fish culturists and it seems probable that several of them have a major bearing.

Most commonly accepted is the contention that the cutting off of Michigan's vast pine forests, through which flowed the shade-cooled rivers where the grayling dwelt, resulted in changed conditions under which this delicate game fish could no longer exist. There can be little doubt that this is true to some extent.

Another belief frequently advanced is that the driving of millions of feet of logs down those same rivers, in the roistering days when the harvest of King Pine swept through its brief heyday, destroyed the spawning beds of the grayling—they spawned in the early spring—and sounded their doom by halting their reproduction. It has been suggested, too, that the driving of cedar logs fouled the grayling streams with acids or other substances that killed off the fish.

And finally, many anglers hold the opinion that the rapid spread of the eastern brook trout, which was not

native to most of the grayling rivers, but which thrived following its introduction, was fatal to the grayling, unable to compete with hardier invaders.

It is not illogical to believe that all of these were factors in the disappearance of the Michigan grayling. No one will ever be able to lay the blame definitely and entirely to one cause.

The grayling was a contemporary of the passenger pigeon and the sturgeon of the Great Lakes. Like the pigeon and the sturgeon, it was unable to withstand the swift passing of the Michigan frontier.

Men, now old, who saw in their youth the great flights of passenger pigeons darkening Michigan's skies and who witnessed the spring spawning run of the sturgeon up the larger rivers of the State saw also the fine catches of grayling. Pigeon and sturgeon, grayling and pine forests vanished at about the same time, (Continuing on page 367)



Above—A rearing station on the Otter, where desperate efforts were made by the State to preserve the grayling from extinction. Below—One of the five last grayling—taken in the net in 1931, in the State's attempt to secure breeding stock

CHARLES LATHROP PACK

AN APPRECIATION

WHEN death claimed Charles Lathrop Pack on June 14, 1937, the curtain fell on one of the most colorful, constructive lives in the field of American conservation. What he did for conservation, and particularly for forestry, it is difficult to estimate. Only the following years can measure it, in terms of the young men who will carry on in this field because of the broadened opportunities his generosity and encouragement have provided. And it shall be seen, too, in the green forests covering thousands of acres where, in 1918, but gaping shell holes and a few blackened stumps marked the once green battlefields of France, Belgium and Italy. For Mr. Pack was president of The American Forestry Association in those unforgettable days of the World War and a project he conceived and financed after the war was the gift to these nations of American tree seeds to bring healing to their battle-torn fields. Today the trees growing there attest his wisdom. Not only are *these* lands greener today because of trees grown from American seed, but later, on the anniversary of our entering the war, April 6, 1922, one hundred million Douglas Fir seeds were sent to Great Britain and France for the rehabilitation of forests whose wood had furnished one of the economic sinews of war.

It is not our purpose here to give in detail the multitudinous and varied humane activities of this genial, kindly man,—for of them a book could be built—but rather to express the appreciation of The American Forestry Association for Charles Lathrop Pack in his relation to conservation. All the world knows of his work,—of his untiring and endless efforts to make the forests

known and loved of men. He fired his associates always with his own zeal for the extension of forest education. He believed, and so often said, "All wealth comes from the soil and this country must realize that fact and save the soil, and thus perpetuate the wealth that soil produces." With all his activities in business, and as the founder and head of a great banking institution, he will best be remembered as a leader in conservation. His love of and interest in trees, born in the boy and nurtured through young manhood, later gave to the forest movement in America one of its most dynamic and enthusiastic forces,—a man who spared neither himself nor his personal resources in advancing the progress of forestry in the most practical ways. It amounted almost to a passion with him—this love of trees. At many leading educational centers today are tracts of forest land set aside for study and experimental purposes, given by Mr. Pack for demonstration purposes and on which scientific forestry could be practiced.

Born in Michigan in 1857, lumberman son of a lumberman father, Mr. Pack pioneered in the conservation field. He was educated in Cleveland, Ohio, and studied forestry in the Black Forest of Germany. When, in 1908, President Roosevelt called the first Conference of Governors to take stock of our natural resources preliminary to the enunciation of his great con-

servation policies, he invited Mr. Pack to attend as a conservation expert, and later appointed him as one of the National Conservation Commissioners. In 1913 he was elected president of the National Conservation Congress and reelected to that office the following year. (Continuing on page 360)



CHARLES LATHROP PACK
1857-1937

EDITORIAL



A New Order in Conservation

OF THE many interesting features of the annual meeting of The American Forestry Association in Ohio last month, the visit to the Muskingum Conservancy District was by far the most stimulating. Here in the rolling hills which form the upper watershed of the Muskingum River, a new order in conservation is in the making. Indeed it is so far advanced as to provide the most practical demonstration of progressive conservation to be found anywhere in America.

The Muskingum project is impressive both in its magnitude and its possibilities as a national proving ground of what can be accomplished by cooperative effort in readjusting land uses to benefit the social and economic life within a given drainage area. The Conservancy District embraces eighteen counties or about one-fifth the area of the State. The District is a political subdivision created under the Ohio Conservancy Act for the purpose of controlling floods in the Muskingum valley. In dealing with the problem of floods, however, the project is bringing into play all phases of conservation and if carried through according to plans, it will in large measure reconstruct the upstream land economy of the watershed.

The central feature of the undertaking is the construction of fourteen reservoirs or conservation pools strategically located and capable of storing and holding back a tremendous volume of flood waters. These reservoirs are now more than eighty per cent completed and the engineers in charge estimate that the reservoir system will be finished by the end of the year. The construction of these reservoirs has necessitated readjustments in both land ownership and land use. For example, they have called for the relocation of about sixty-five miles of railroad, changes in an equal mileage of gas and power lines, 207 miles of telegraph and telephone lines, 150 miles of highway, thirteen miles of oil lines, and the relocation or abandonment of three villages and portions of eleven other villages.

Complementary to the reservoir system, work is underway to bring about improved methods of farming to conserve soil and water, reforestation and revegetation of areas unsuited to farming, the propagation of fish and wildlife and the development of outdoor recreation. Opportunities in this last respect are great in that eleven of the reservoirs will create permanent lakes ranging in size

from 350 to 3,550 acres.

All this is being accomplished as it should be, through the cooperation of local, state and federal agencies. The Conservancy District has assumed the cost of furnishing the needed land, the State is carrying the burden of highway relocation, and the Federal Government, through the engineering corps of the Army, is constructing the reservoir and related works. In carrying out the conservation program for the watershed, dependence is placed upon the coordinated services of more than a dozen agencies, including the state and federal forest services, the Soil Conservation Service, the Bureau of Fisheries, the Resettlement Administration, the U. S. Weather Bureau, the agricultural departments of the state universities, and the state experiment stations and other agricultural agents.

Looking ahead ten or twenty years, it does not take much imagination to envision the upper watershed of the Muskingum River as a land of outstanding beauty and permanent well-being. Set in the green hills will be a system of lakes, attractive rendezvous in both summer and winter for people throughout the Middle West. On the hill-sides and in the valleys, farms and forests will form an orderly pattern of land tenure based upon intelligent use and conservation of nature's resources. And of equal or greater moment to the millions of people living on the lower reaches of the Muskingum River will be assurance of protection against devastating floods.

In addressing the Association at Zanesville, Judge Robert N. Wilkin, formerly of the Ohio Supreme Court and at present head of the Conservancy legal staff, remarked: "The preliminary work of dam construction having been nearly completed, it is natural that the District should look to the forestry departments of state and federal governments for assistance in restoring to the barren hilltops their pristine verdure. The reforestation of the hills which now support only sorrel top and poverty grass is necessary not only to prevent erosion of lands and silting of reservoirs but to give the works of the District their crowning glory of beauty."

The engineers have done their work well. It is now up to the forest, soil, and wildlife conservationists to complete the picture. Theirs is a great opportunity.



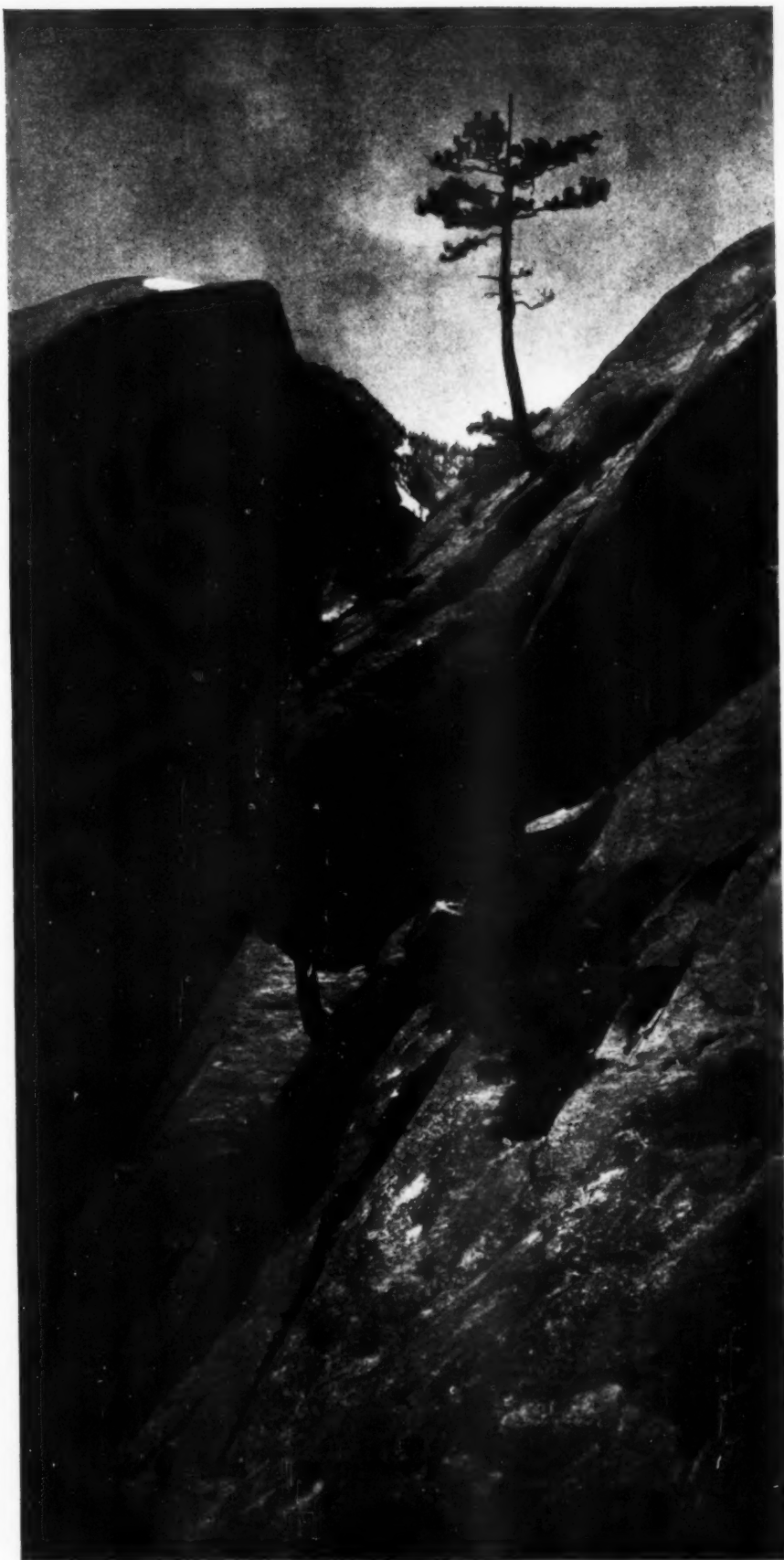
ROCK - BOUND

Photographs by the
United States Forest Service

Aspiring to the sky, com-
panied only by the rocks
—a solitary figure of
strength and beauty

TREES

The mission of the trees is known to all men—written in a universal language. But their manner of fulfilling their destiny, their silent, undeviating approach to their goal of full life expression, varies. Their adaptation to environment is a challenge to defeatism. Nothing deters them. Not even solid rock itself. Seemingly wombed in the very heart of rock, their tiny seeds wait patiently. In time their faith is rewarded, and minute rootlets find the nourishment they need to start growth upward toward the light—ever toward the light. Rock may perhaps offer a temporary barrier but eventually gives way as the trees silently fulfill their destiny. Theirs is a story,—written here in pictures,—to inspire and bring courage to the hearts of men





Crouched like some creature of faery lore, strong roots spread wide—this tree has conquered its rockbound home and sent its vigorous trunk upward—attaining to the heights

Right—Here life stirred and took strong hold. In its fight for survival the tree sent down slowly descending roots, tirelessly seeking the nourishment needed from the breast of earth



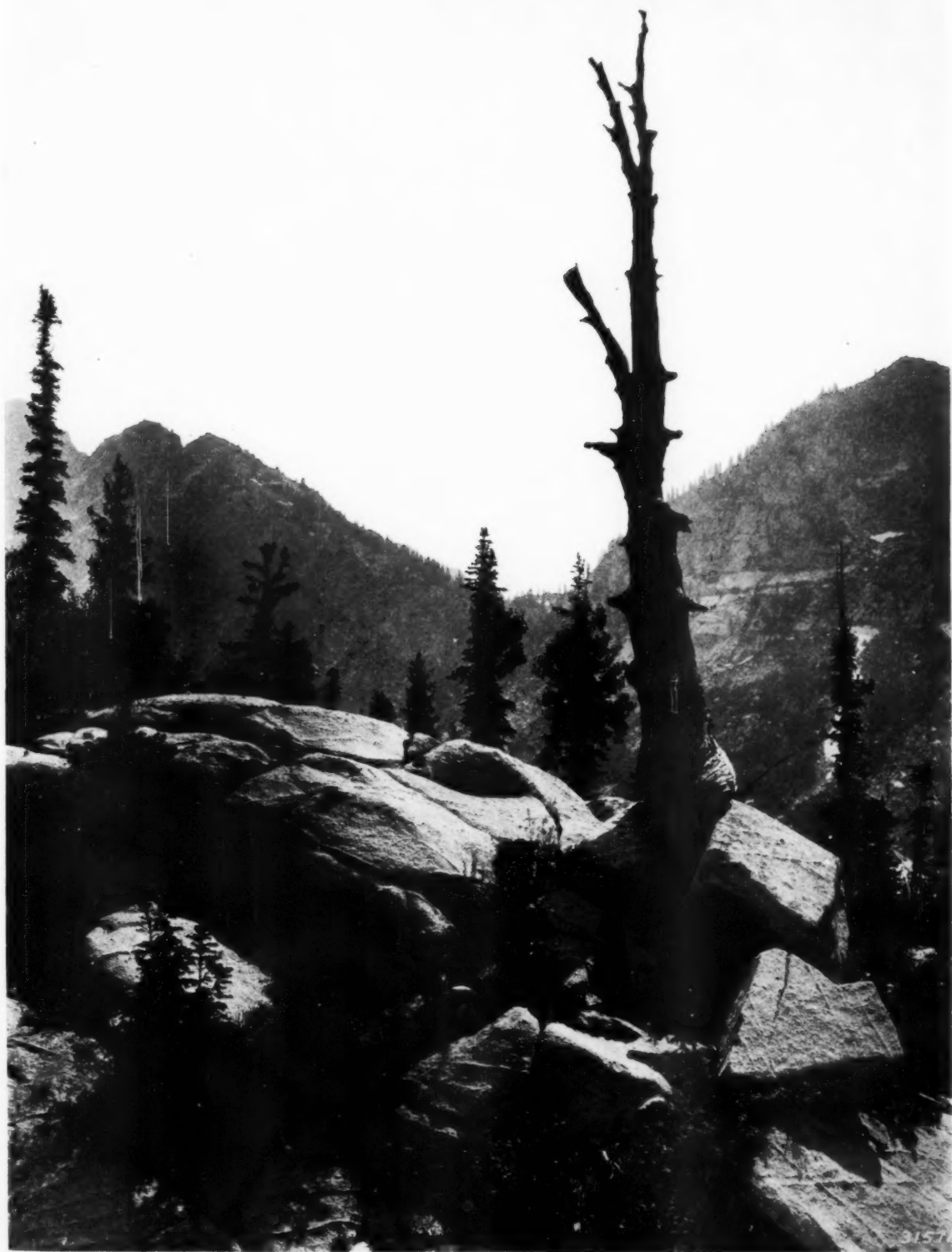


Late flowering—the last vigorous expression of a veteran about to die

Below—A mighty tree splits through its rock prison and rises triumphant!



Photograph by Haanstadt



The battle won — and lost!

CONFERENCE SEEKS FLOOD CONTROL ACTION

Foresters and Engineers Stress Comprehensive Plans for Major Watersheds at 62nd Annual Meeting of The American Forestry Association

IN A setting where the catastrophic effects of flood waters still linger and, more important, where man is conducting his most unique and noteworthy effort to control floods, the 62nd annual meeting of The American Forestry Association, held at Cincinnati jointly with The Ohio Forestry Association May 31 to June 3, will take its place as one of the most significant conferences in present day conservation.

First, it brought about a clearer public concept of the whole problem of water conservation and flood control, from major engineering improvements on waterways to the retardation of runoff

in the interest of flood control. It approved the Flood Control Act of June 22, 1936, in which both major engineering improvements and conservation practices are recognized and given definite places in a national flood control program, and urged by resolution that adequate appropriations, as authorized by Congress under the Act, be made immediately available for its application to the major watersheds of the country.

Led by Secretary of Agriculture Henry A. Wallace, a score of nationally known figures addressed the conference, among them Congressman William M. Whittington, of Mississippi, chairman of the



JAMES G. K. McCLURE, JR.
President, The American Forestry Association

and waterflow and the prevention of soil erosion on their watersheds. The public, through the medium of the conference, was given opportunity not only to review on the ground the tragic after-effects of a major flood disaster, such as struck the Ohio Valley early this year, but was shown in the Muskingum Watershed Conservancy District the latest developments in water conservation and control.

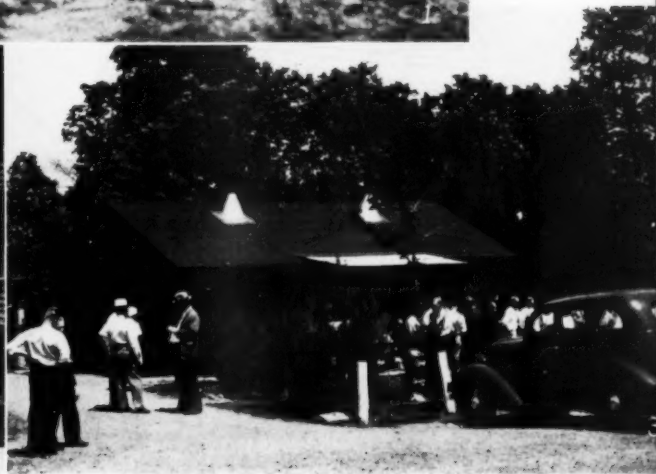
Second, the conference brought conservation and engineering practices together on common ground



HENRY A. WALLACE
Secretary of Agriculture

House Committee on Flood Control, General Max C. Tyler, assistant chief, United States Army Engineers, Henry S. Graves, dean of the Yale Forest School, and a former member of the Mississippi Valley Committee of the National Resources Committee, and Gifford Pinchot, former governor of Pennsylvania. James G. K. McClure, Jr., of Asheville, North Carolina, president of The American Forestry Association, presided over the conference.

The keynote of the meeting was sounded by Mr. McClure in his opening address at Cincinnati on



1. Group inspecting Bolivar Dam in the Muskingum Watershed Conservancy District

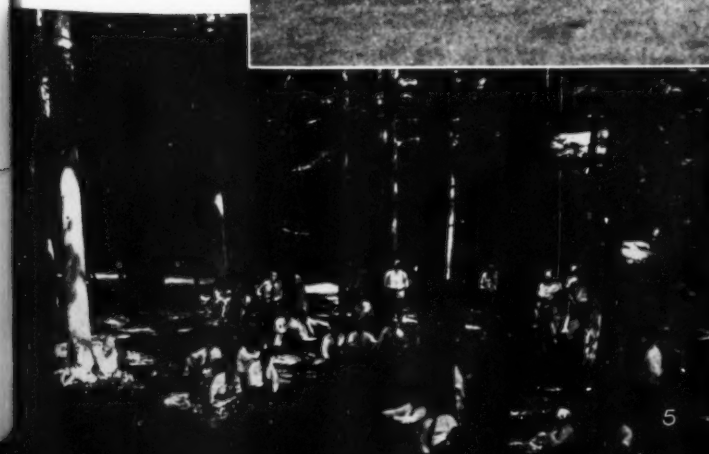
2. A first-hand view of flood damage at New Richmond

4. Group at Demonstration Farm of Soil Conservation Service, Muskingum Watershed Conservancy District

3. Members visit the CCC Camp, Hocking State Forest

5. Exploring the beauties of Hocking State Forest

6. Viewing flood damage along the Ohio from the "Island Queen"



May 31, when he presented a four-point plan for flood control. He said:

"Plans for river control and development should consider each river or major tributary as a whole, and each public project of construction should constitute an integral part of a complete plan for the river system concerned.

"Public works for river control and development should be closely coordinated with programs for reforestation, soil conservation and erosion control, including intelligent agriculture, conservation of forests, range and pasture, and other features of constructive land use.

"The interstate character of most important river systems, the magnitude of the river control task and the social and economic benefits of control works justify and require participation of the Federal Government in the planning and execution of these activities.

"It should be the general principle except in cases of improvements for navigation that the localities chiefly benefited by public works for river control should bear an appropriate share of the cost, with a liberal contribution by the Federal Government."

Secretary Wallace called for active cooperation from farmers and engineers, agronomists and economists, foresters and tree lovers that the nation in the next ten years might "do a real job of retarding floods."

Giving credit to the army engineers for the building of vast flood control systems and the rivers and their tributaries, the Secretary called on foresters to pursue their job "back of the front lines.

"The great dams and reservoirs and levees built by the engineers downstream may always be more important in controlling floods than anything we can do on the land," he said. "The people of the river valleys must continue to rely on these structures as the most immediate defense against floods. Nothing we say or do must interfere with the strengthening and multiplication of these defenses.

"Our job is back of the front lines, away from the great central valleys and up in the hills. The land in every watershed has a vital and irreducible part to play in any program of flood control. Wise management of the land will prevent many minor floods and reduce the crest of major ones. Wise management of the land can strengthen the defenses of the engineer downstream. Furthermore, in the long run many of the large engineering structures downstream will lose their effectiveness in flood control unless there is also land control upstream."

Land control upstream means wise management of the soil, Secretary Wallace said. "It makes no difference where this land is located, whether in the plains, in the valleys, or in the mountains. It makes no difference as to the kind of land, whether farm land, grass land, or forest. The secret of upstream control lies in preventing the development of floods at the point where raindrops fall."

A considerable part of the program can go only

as fast and as far as the farmers and the land-owners wish it to progress, he said. "We can talk all we wish about the desirability of a far-flung upstream program for flood control, watershed by watershed. But unless the individual farmers who own and manage the land in those watersheds agree with us, and find it possible to change their land-use practices in the direction of erosion control and flood prevention, then our program will remain but a paper one."

The forest story has been told so effectively that the American people are tree-conscious to a high degree, the Secretary declared, adding that he would like to see them become grass-conscious to the same extent.

"In the western country I find that the men of the Forest Service have developed a reverence for grasses which is akin to that which they hold for trees. They have seen with their own eyes the way overgrazing has made it possible for sudden storms to send masses of mud down mountain canyons, causing millions of dollars' worth of damage to the people of the valleys.

"I know that grass is humble, whereas trees are dramatic; that trees live long, grass only briefly; but in its humble way grass is perhaps just as important as trees in renewing the fundamental resources of the United States."

Congressman Whittington cited the national flood control policy which in 1936 placed flood control and allied works under the War Department and related problems of runoff and water retardation under the Department of Agriculture, and urged that this policy be perfected and applied without delay to prevent a recurrence of the 1937 floods in the Ohio and other valleys of the United States.

"With the Sword of Damocles, in the form of great floods, hanging over thousands and thousands of men, women and children, what reason is there for further delay?" he asked. "Plans have been studied for years—they have been submitted. Why should the execution of these plans be postponed? The remedy is not to delay. It is to expand, improve and perfect the flood control policy of 1936."

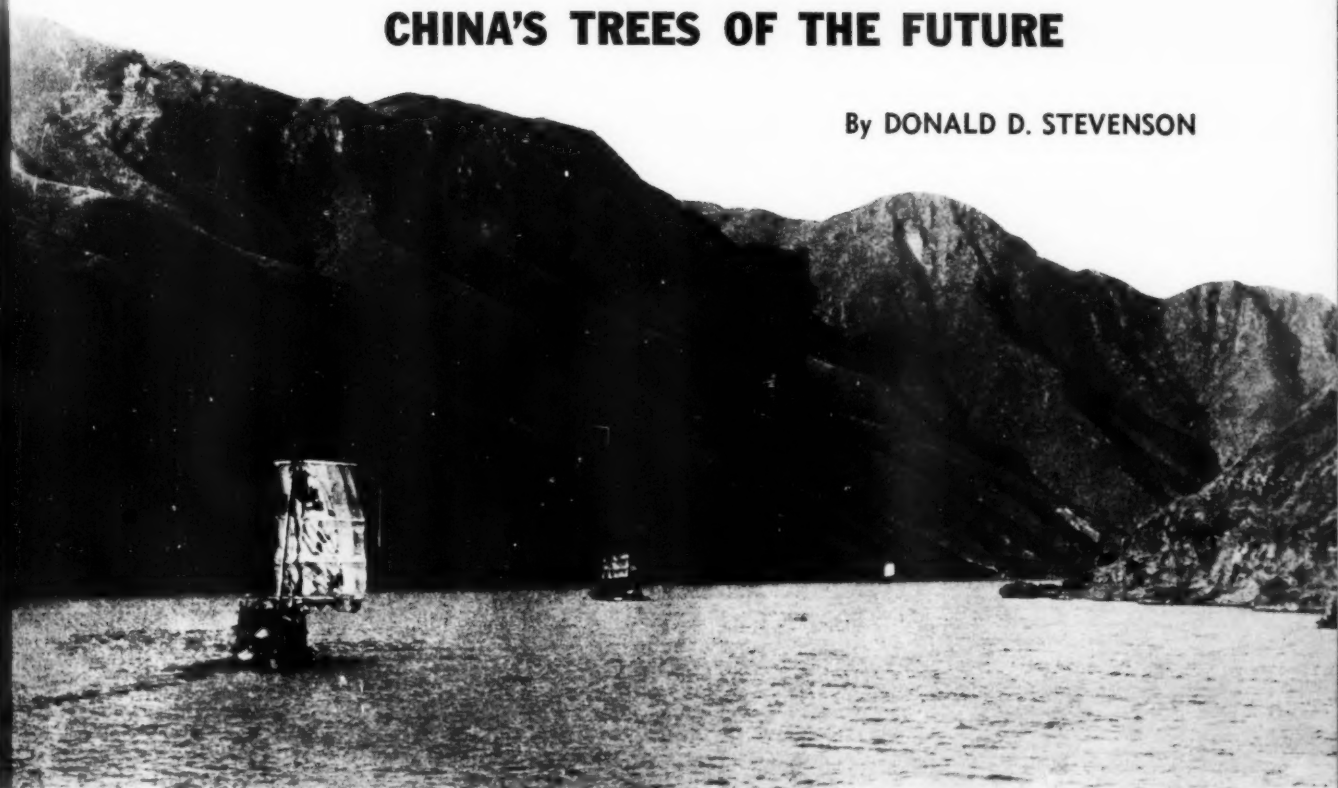
In perfecting this policy, he said, there should be a liberalization of the federal contribution for reservoirs, especially where two or more states are affected or where the benefited areas are contributing at present to flood control protection.

"It takes a great flood to secure a great program," he said. "I believe the hour has struck for the expansion of our national policies for flood control, forestry and conservation. There is no conflict between the War Department and the Department of Agriculture; there is no conflict between downstream engineering works and upstream land management; the one reinforces the other; they are integrated, and they cooperate and coordinate. The agencies that plan land management should execute the plans and the agencies that plan flood control works should build them."

Although Congress (Continuing on page 354)

CHINA'S TREES OF THE FUTURE

By DONALD D. STEVENSON



The great gorge of the North River, in South China, on the bare brown hills of which is written the record of deforestation

Photograph by W. Augur

BEFORE the conservation movement in the United States had reached the proportions to which it has grown of late, China was always pointed to as the classic example of the evil results of deforestation. Her barren hillsides and her destructive floods were cited as evidences of the relation between cause and effect. Abuse of the land was seen to be followed by disasters to great portions of the population.

But as the movement to conserve our natural resources has expanded and awakened widespread public interest, we have, in taking stock, come to realize to what extent our own land areas have been abused and mismanaged during the comparatively short period of America's history. Consequently, we are less inclined to point a finger at China, for we, too, now understand how sadly we have dissipated the natural riches the Creator has given us. We, like China, are in the position of one who, having made mistakes, is now very anxious to turn over a new leaf.

It was with such a fellow feeling that I had occasion to make a general survey of the interior of Kwangtung, China, a region which offers great possibilities for practical results from a program of land conservation.

Kwangtung is one of the most southerly provinces of China and borders on the French territory of Tongking. Its capital city, Canton, is in

the same latitude as Havana, Cuba. As a commercial center for many centuries, Canton was the first port to be opened to foreign trade, and the Cantonese have long been the progressive element in Chinese life. The province supports a population of about thirty million. These teeming millions live in the river valleys and delta regions and actually occupy only one-fifth of the total land area of the province, which may be compared in size with the State of Missouri. Range after range of hills and mountains create a rugged topography and a land use problem of great importance.

In the valleys and on the alluvial plains intensive agriculture produces rice, sugar cane, citrus fruits, bananas and many vegetables. Hill-side terracing is practiced in some parts of the province with immense labor and with slight economic returns. The sub-tropical climate produces luxuriant plant growth on the coast and in the interior.

Our party of three left Canton by the railroad which is soon to be connected with Hankow, on the Yangtze River. We rattled for a time past flooded rice fields and vegetable gardens in the valley of the North River, one of three rivers which flow together at Canton, then wind through low, brown hills with views of higher ridges. Some of the hills were clothed with a



Photograph by T. C. Lau

In northern Kwangtung Province—the valley of the Yan Fa River. In the distance are the giant sand-stone buttes of the Red Cloud Mountains. On the slopes of the Mei Ling range beyond are found many trees and plants typical of temperate regions. Beyond the cultivated lands near the river, the natives must struggle for mere existence

ragged mantle of native pine, remnants of larger forests which must have covered much of the open hill country of southern Kwangtung. But most of the hills looked bare and brown, now supporting only rank grasses and ericaceous shrubs, not even fit food for cattle. The water buffalo and native cattle must be grazed on the edges of the rice fields, and along the canals and irrigation ditches where sweeter grasses are available.

A glow was visible on the horizon and smoke rose from the hills. Villagers were burning the grass cover as is their annual custom. When asked why they set fire to the hillsides their answers were various: "To scare away tigers and snakes," or "to fertilize the rice fields below with the ash." The fires burn not only the grass but the shrub and tree seedlings as well, leaving broad, brown patches of bare mineral soil, easily erodible and totally unproductive.

Before mid-day, after numerous stops at tiny stations along the line, the settlements became sparser. We had rejoined the valley of the North River, which at this point becomes a swift flowing stream rushing between high gorges and steep mountain sides. It has pushed its way through these defiles since Tertiary times, forming cuts in otherwise almost continuous mountain ranges running east and west. In the moister ravines on these hillsides we glimpsed patches of deeper green where, due to the inaccessibility of the region or to a certain amount of protection by nearby monasteries, broadleaf evergreen trees are growing. These were the remnants of the luxuriant rain forests which must have occupied at least the moister northern slopes of this hill country

before ax and fire were brought into play. That such evergreen forests were probably widespread is proven by the existence of a heavily timbered tract of primeval rain-forest to the east of the region we were traversing.

At Taihanghau, a small station near Yingtak, we saw coolies loading huge camphor logs which had been cut in this forest. On Waat Shui Shan, (Slippery Water Mountain) in the midst of this forest, were fine specimens of camphor, oriental gum, and

many species of the legume, laurel and fig families. These frequently grow on the higher slopes in mixture with native pine and China fir. An interesting component of such a forest is the bamboo, economically of great importance, since the Chinese are adept in putting the different species to a variety of uses. Some kinds are used for food, the delicious bamboo sprouts of a well-cooked Chinese meal, while from others are made paper, furniture, musical instruments, baskets and carrying poles.

Early in the afternoon we arrived at Yingtak, one of the larger towns in this region, located about one hundred miles north of Canton. Here we waited for an hour while members of the train crew ate their rice and watered the engine. The passengers took advantage of the halt to patronize sellers of noodles, tea and cakes. We were glad to join in with the rest and buy steaming bowls of doubtfully clean mien and soup.

It was late in the evening before the train pulled into the northern terminus of the railroad, Shiu Chow City, built on both sides of the North River, and connected by a pontoon bridge. We found a place to stay on one of the hotel boats anchored in the river and retired as soon as possible to rest up for a cross country trek the next day. From this point we were to travel by foot northeast to Taan Ha Shan (Red Cloud Mountain) to view the most northerly regions of the province.

Our route the next morning led along the main road towards Yan Fa, the county seat of that district. The road was nothing but a path of cobblestones worn smooth by the grass and

leather sandals of villagers bringing their produce to market in the city. As we swung along the path and gradually left the cultivated lands by the river behind, the higher peaks of the Mei Ling Shan appeared in the distance beyond the bare brown hills of the immediate vicinity. The Mei Ling mountain range runs

But the Mei Ling Shan was many miles beyond us. As we swung along past barren lower slopes we came upon miserable mud villages of a few dozen inhabitants each. Here the struggle for existence is a difficult one. Only one rice crop a year can be grown in this more northerly region. Terracing on *(Continuing on page 366)*



At the left are people of the country digging grass roots for fuel in central China

Only on such sites as this — the Fei Loi Monastery on North River — are to be seen today remnants of China's former forests

Photographs by W. Augur

east and west and acts as a rough dividing line between Kwangtung and the provinces of Hunan and Kiangsi to the north. It is through this barrier that the railroad must be constructed to link up with the line running south from Hankow.

We were already in a region which differed in climate and topography from the more southerly districts, being more mountainous and cooler, with reduced evaporation. The more tropical broadleaf evergreens gave place in part to deciduous northern types, where altitude has affected the climate. Thus, on the upper slopes of the Mei Ling are found many trees and plants typical of temperate regions, such as oak, hornbeam, birch and maple.



THE FOREST DRIVES YOUR CAR

By NICHOLAS VON FELSEOVANYI

DURING the last ten years many European countries, in the hope of freeing themselves of dependence upon imports, have carried on an intensive search for a substitute for petrol that would be available in adequate quantities from local sources. Those countries rich in forests naturally turned their attention to the possibilities of wood as a source of power for mechanically propelled vehicles. The result is that today not only passenger cars but busses, trucks, tractors, and a great variety of stationary engines are being successfully operated with wood gas.

The principle is based upon the carbonization of wood from which "a forest gas" is derived which has the same effects in motoring as genuine gasoline. The carbonization is accomplished not in the forest by means of the familiar and age-old kilns covered with earth but in metal kilns or generators built into the vehicle and into which the wood can

To the American motorist, the idea of pouring a basket of wood chips into the tank of his car and expecting it to supply the necessary motive power for his engine will doubtless seem too fantastic to accept. Yet that idea has become so much of a reality in France, Germany, Italy and a number of other European countries that today vehicles operated with wood gas are a common sight. In this article, Mr. Felseovanyi, of Vienna, Chief of the Department of Timber Utilization, Comite International du Bois, describes the remarkable developments abroad in the use of wood gas as a substitute for gasoline in the operation of mechanically propelled vehicles. While the use of wood gas in the United States, with its abundant supply of gasoline at low prices, would seem impracticable, the developments of the future may have a different story to tell.—Editor.

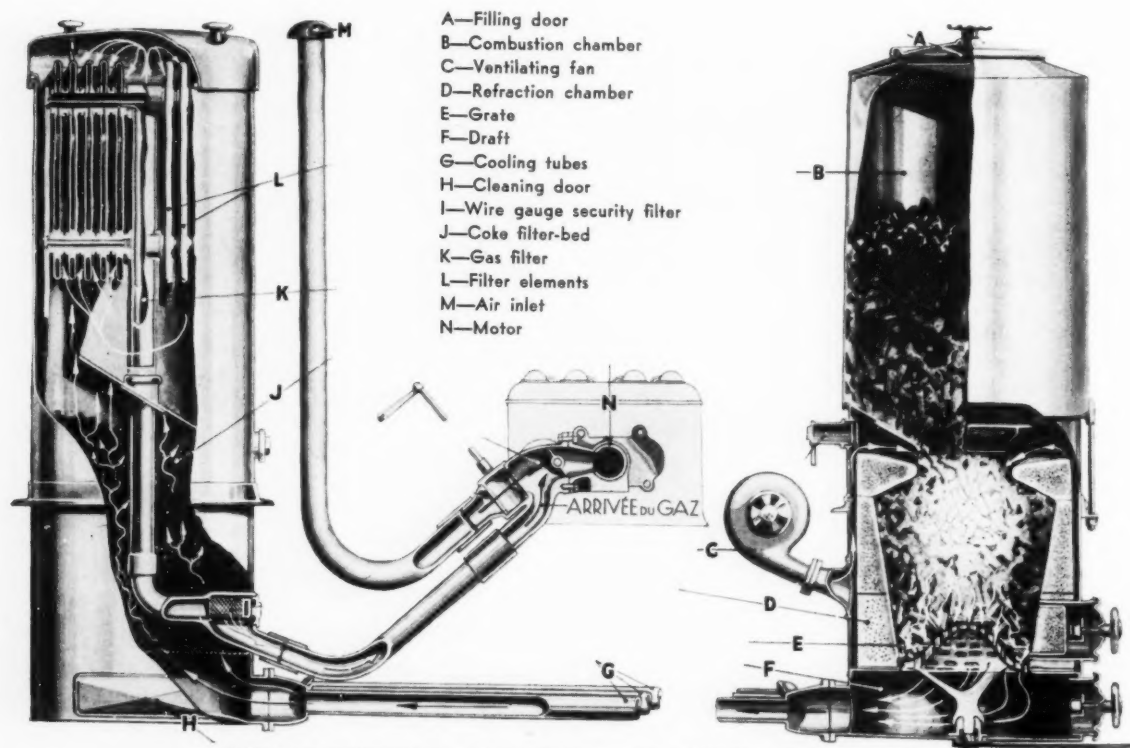
be dumped directly at "filling stations" along the roads.

At first it was sought to utilize the raw material in its native state and the generators were designed to extract gas from the raw wood. Later—most notably in France—the chemical qualities of wood charcoal caused it to be adopted for the extraction of gas

in portable generators. Nowadays the use of wood or wood charcoal is advocated to an equal extent in countries interested in the new fuel for internal combustion engines.

The following description of the gasogene automobile, as it is called, is taken from the "Revue Internationale du Bois."

"Wood or charcoal feed a sheet iron apparatus called the 'generator.' The wood generator does not differ very much from the charcoal generator except in its upper part, where the wood is transformed into charcoal by a process analogous to



Wood gas equipment of a French Panhard coupe, illustrating charcoal generator (right) and purifier (left) and course of the gas from the generator to the motor

the process going on in the metallic kiln.

"Charcoal is then put in contact with an air current kept at higher and higher temperatures until it gets red hot. It bursts into flame, is distilled, and yields a complex gas, the useful constituents of which are carbon oxide and hydrogen.

"This gas is cooled and then sent to the refiner, which holds back all solid and liqueous impurities.

"For this purpose the gas must pass through various absorbers, such as metallic baffle-plates, cotton filters, brass linings, etc., each making having its own devices.

"Now the 'forest gas' is ready for use. Its useful constituents, when air is added, will explode under the effect of an electric spark just as does the gasoline of our common automobiles.

"Our 'forest gas' then goes to the 'mixer' which adds the necessary quantity of air. A faucet in the crank-case regulates the mixture; this is the only part of the mechanism of gasogene motor vehicles which is not found in ordinary gasoline engines.

"From the mixer the gases go to the motor. In a standard motor they do not produce as much power as ordinary gasoline, for their calorific value is less. This may be remedied by an injection of gasoline into the cylinders at the starting or on a steep hill, to compensate for this loss of power. In short, there are plenty of means to reduce, if not to eliminate altogether, the loss of power peculiar to gasogene motor cars."

The diagram opposite illustrates in detail the conversion of wood to gas and the various stages in its course to the motor. It is in error to assume, as many non-experts do, that any wood is suitable for the extraction of gas or that it may be of any size or species. The most suitable species are hardwoods cut into blocks of about two by two by three inches and air seasoned. Recently, however, successful results have been obtained with softwoods, in spite of the fact that they produce a higher proportion of tars and acids that have a tendency to cause the cylinders to stick or become corroded. These harmful contents of the gas from both hardwoods and softwoods, however, are in part consumed in the generator itself; the remainder is extracted from the gas by the purifier by which the gas is led into the carburetor. When raw wood is used instead of charcoal its greater volume requires that the generator be filled more frequently.

Because of the chemical purity of charcoal, particularly its complete freedom from tars and acids, the generators designed for its use are much simpler in construction and consequently lighter. The purification of the gas is much simpler, but there is the drawback that gas obtained from charcoal contains fine carbon dust which must be carefully removed by filters.

The quality of (Continuing on page 368)



Just fill up by buying a basket of "forest gas" at a station along the road. In this car the generator is concealed in the trunk



The new fuel serves to operate this Deering tractor at a cement works in Yugoslavia. The generator is fully exposed on the driver's right

Below—And it also furnishes the motivating power for this 22-seat bus, with generator inconspicuously set in the rear



SLASH PINE

Pinus caribaea Morelet

By G. H. COLLINGWOOD

SLASH PINE ranks high among the rapid growing, early maturing pines of the southern coastal plain. Because of its ability to produce

heavy stands of timber and its yield of high quality resin, it is probably the most profitable of all southern timber trees.

It grows on low ground and on hummocks in swamps or moist "slashes" from southern South Carolina to the keys of Florida and westward across Georgia, Alabama, and Mississippi to eastern Louisiana. It also occurs in Central America, Cuba, the Isle of Pines, the Bahamas, and other islands of the Caribbean Sea, which explains its scientific name *Pinus caribaea*. The southern extremity of its range, including lower Florida, produces pure forests of slash pine, while elsewhere it may be associated with loblolly and longleaf pine.

Best growth and purest stands are attained in Florida and southern Georgia, where trees rise to heights of eighty to 150 feet and attain trunk diameters of two to three feet. The average height is about 100 feet, with clear lengths of sixty or seventy feet surmounted by a dense, rounded crown of heavy horizontal limbs. During its first twenty to fifty years, slash pine exceeds all of the southern pines in growth, reaching heights of forty-five feet and diameters of six inches in twenty years, and attains over eighty feet in height and fifteen inches in diameter by fifty years. Trees mature at about one hundred years but may reach ages of 150 to 200 years.

The dark lustrous green needles grow in bundles of two, three, or more—but are most frequently in pairs. They are eight to twelve inches long, forming dense clusters near the ends of the branches, and drop off in their second season. While shorter than those of longleaf pine, they are longer than loblolly, and darker green than either.

In spring the reddish brown terminal bud elongates into a light gray "candle" about the thickness of a large pencil in contrast to similar "candles" from the larger terminal bud of longleaf pine, which are an inch or more in diameter.



The rapid growing early maturing slash pine is one of the profitable timber trees of the South Atlantic and Gulf States

During January and February, before leaf growth starts, dark purple staminate flowers appear in crowded clusters at the base of twigs of the previous year's growth, while at the ends of the same or similar twigs are pink pistillate flowers on long stems which develop into small erect cones. They hang down during the second season, and by October have matured into glossy, leathery-brown, egg shaped cones three to six inches long. The thin, flexible cone scales are each armed with a slender, slightly recurved prickle. These prickles, borne on the varnished end of each cone scale, are peculiar to slash pine.

Under each cone scale is a pair of mottled dark gray winged seeds. Large crops are borne every two or three years, which are carried by the wind to assist in this tree's aggressive reclamation of old fields and cut-over areas. There are 16,000 to 18,000 clear seed in a pound, with sixty to ninety out of every 100 seed fertile.

The bark is clear orange to red-brown, one-half to three-quarters of an inch thick, consisting of many overlapping, irregular plates or scales which form broad flat ridges on the trunk. Turpentine workers invariably associate the orange bark with free flowing resin qualities, for slash pine excels all other southern pines in production of rosin or gum containing a large content of spirits of turpentine.

The light brown to rich orange wood is coarse grained, resinous, brittle, without durability in contact with the soil, and a cubic foot weighs—when air dry—about forty-eight pounds. Accordingly, it is the heaviest of all pines and comparable to the hickories and white oaks. The wide sapwood is nearly white. It so closely resembles the wood of longleaf pine that a distinction is seldom made when the lumber is marketed. Large quantities of second growth timber are cut for railroad ties, increasing amounts for wood pulp, and mature trees are used for general construction and interior trim.

The moist location of most slash pine stands provides natural protection against fire, but trees are often subject to red heart rot.

Slash pine is one of the most rapid growing and early maturing of all eastern forest trees. Because of its capacity to produce wood pulp, fuel, lumber, and naval stores, as well as its adaptability to moist, sandy soils within its range, it is being extensively planted in several of the southern coastal states. Moreover, it is recognized for its unusual beauty and is being used to an increasing extent for landscape and roadside planting in the South.

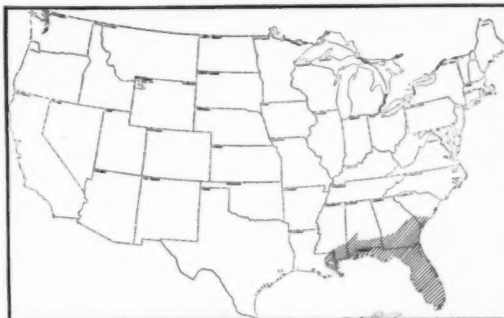


William M. Harlow

The short stalked three to six inch cones are armed with distinct prickles on each cone scale. Leaves are in bundles of two or three



Irregular orange colored plates lay one over the other to make a half inch layer of bark



Natural range of slash pine in the United States

CONFERENCE SEEKS ACTION ON FLOOD CONTROL PROGRAM

(Continued from page 346)

has requested delayed action on a comprehensive plan, he said, insistence for action has brought concessions in the form of recommendations for a flood control bill for at least some of the priority and emergency projects to protect areas and populations in the lower Ohio Valley.

One of the new policies projected, he stated, is the establishment of eight administrative authorities patterned after the Tennessee Valley Authority. This, he pointed out, would "scrap the Flood Control Act of 1936 before it had been tried." He asked for a "united and concerted attack on the flood problem by established, existing and experienced agencies.

"It is a big problem and it will take time to complete it," he said. "It required ten years to complete the main Mississippi River project. It will take six years to complete the projects in the National Flood Control Act of 1936. The comprehensive plan contemplates the expenditure of \$800,000,000 over a series of years. The losses in the flood of 1937 alone will exceed the total appropriations."

Presenting the engineer's appraisal of the flood problem, General Tyler declared that it is perfectly possible to confine and control the runoff of flood waters if we proceed in a workmanlike and scientific manner.

"There is no mystery as to the necessary procedure to accomplish it," he said. "Four sound engineering methods are at our command. We can give flood waters an easier way past us, we can keep it off us, we can hold some of it back, and we can move some of our property out of its way.

"We can increase the carrying capacity of channels by the enlargement of cross sections, better alignment, and rectification of slopes. Thus a given quantity of water may be carried by at a lesser height than formerly, or a greater quantity at the same height. We can build earth embankments when there is room, and river walls where space is restricted, to keep flood water out. We can build impounding dams and increase the absorptive capacity of the land to hold back part of the precipitation until it can be passed down stream with safety. And we can divert areas not highly developed to better uses—slum dwelling areas to parks and the like."

The seventy-four best reservoir possibilities in the Ohio basin, excluding those of the Tennessee Valley, he said, if operated primarily for flood control, would have reduced the maximum flood heights this spring at important points on the Ohio River about as follows: Pittsburgh, Wheeling and Parkersburg, eight feet; Cincinnati, four feet; Louisville and Cairo, two feet.

"Such reductions are not adequate to prevent the flooding of many important centers of popula-

tion and industry along the main river. It should be recognized, however, that the greatest benefits to accrue from the reservoirs will be in the tributary basins in which they are located. In those basins flood damage will be practically eliminated."

The retention in the soil of any part of the precipitation which otherwise would run off in a flood, General Tyler said, will in effect add just so much to the storage capacity of the practicable flood control reservoirs, and by that amount will increase the factor or margin of safety of the engineering flood control works—or permit of a corresponding reduction in the number or capacity of flood control reservoirs. In certain areas the prevention of soil erosion will decrease the siltation of reservoirs and increase their useful life."

Henry S. Graves, in presenting the forester's appraisal of the flood problem, spotlighted water conservation through intelligent forest management.

"About seventy per cent of the 600,000,000 acres of forest land in the country are so situated as to have some measure of benefit to water flow, local or otherwise," Dean Graves said. "The forester comes in direct contact with the problem because of his responsibility in management of forests and in advice to forest owners.

"Water is one of the natural resources within forests which the forester seeks to protect and develop just as he does timber, minerals, forage for livestock, agricultural lands, wildlife, inland fisheries and general recreation resources. He is interested in developing forests that will serve in checking the silting of reservoirs and irrigation canals, in securing a maximum soil seepage of waters to sustain dry-weather flow, in prevention of pollution of waters, in safeguarding the watersheds serving municipalities and small communities for domestic supply or contributing to agricultural use or to mining and industry."

A continuous cover of vegetation on slope exercises a very material influence in retarding surface runoff of water, he said, adding that this is most effective in cases of well conditioned forests.

"The checking of erosion is one of the first beneficial effects of forest cover," Mr. Graves said. "This means not only conserving the soil for the production and maintenance of forests, but also preventing a radical change in conditions of surface runoff of water that follows erosion."

There is further a notable influence of the forest on the melting of snow, he declared, pointing out that some of the snowfall is intercepted by the crowns of the trees and that in many places the melting of snow in the forest is delayed a week or more after that in the open. This gradual melting of snow in the forest, he stated, normally acts to lessen velocity of runoff at a critical period of the year.

(Continuing on page 363)

REGION 2 CONSTRUCTS NEW ROAD



NEAR Colorado Springs in Region 2, two U. S. Forest Service "Caterpillar" Diesel Tractors are speeding the construction of a full-sized road along the crest of the Rampart Range. One tractor is equipped with a LeTourneau Angledozer. Its duties are to clear trees and stumps from the right-of-way, to carve the ledge, to push boulders off the roadway, and — with blade straight across — to move dirt short distances for grading. The other tractor pulls a 2½-cubic-yard revolving scraper, cutting and filling to grade and smoothing the surface.

Two men and these two units do the complete construction job. Handling big loads on blade and in scraper, they make the job a quick one — and a cheap one, too, for the tractors average only 2¼ gallons of low-cost Diesel fuel per hour. This is another job that shows why scores of these Diesel tractors are at work for the Forest Service today.

CATERPILLAR

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TRACTOR CO., PEORIA, ILL.



WORLD'S LARGEST MANUFACTURER
OF DIESEL ENGINES, TRACK-TYPE
TRACTORS AND ROAD MACHINERY

AROUND THE STATES

ADD TO NATIONAL FORESTS

Addition to the National Forests of 24,378 acres by purchase and 29,493 acres by exchange is approved by the National Forest Reservation Commission, Secretary of War Woodring, president of the Commission, announced June 11. Land approved for purchase is in Idaho, Minnesota and Utah—for exchanges, in Michigan.

These are approved purchases: Davis County, Utah, 11,846 acres, valued at \$35,540; Provo, Utah, 2,932 acres, valued at \$11,379; Arrow Rock, Idaho, 1,128 acres, valued at \$2,095; and Superior, Minnesota, 8,470 acres, valued at \$25,411.

The Arrow Rock purchase unit in the Boise National Forest, authorized by the Commission in 1935, was established on the watershed of the Arrow Rock Dam to halt the silting of the reservoir, which irrigates a large area. The land approved for purchase is steep, the soil loose, and the cover a brush-grass type.

On the land approved for purchase in the Davis County and Provo purchase units in Utah, excessive grazing has contributed to rapid runoff and floods. The purchase further consolidates watershed lands held by the government on the mountain slopes above Utah's central valleys.

Acquisition of 8,471 acres for the Superior National Forest in Minnesota along the International Boundary in the Quetico-Superior Project was recommended by the Forest Service because of proposed extension of roads into a Primitive Area for recreation. Private owners already had donated 600 acres to the government. The federal purchases will give greater protection to the area.

The approved Michigan exchanges total 58,449 acres, appraised at \$161,774. Under the Michigan forest exchange law, 29,493 acres of state lands within the National Forests, valued at \$80,888, were traded to the National Forests for 28,956 acres of government land of equal value in the state forests. These consolidations will improve administration for both the national and the state forests.

Through these exchanges the Marquette National Forest will be increased by 11,864 acres, and the Ottawa National Forest by 17,629 acres. Several state forests will share in the lands previously bought by the government for making the exchanges. The Commission eliminated 21,383 acres from the old Mesaba Unit, since this land also is included in the George Washington State Forest of Minnesota, created by the State Legislature in 1933.

Recess action on purchases of small tracts aggregating 1,695 acres in seven National Forests of the Southeastern region and 751 acres in nine forests of the Central States, at a total cost of \$10,598, were ratified. The Commission also ratified land exchanges of about 87,000 acres of forest land in Michigan, for which recess approval had been announced previously. Purchase of 1,542 acres made in the Cumberland National Forest, in Kentucky, at the same time also was ratified.

PENNSYLVANIA LAUNCHES FLOOD CONTROL PROGRAM

Secretary James F. Bogardus has announced that the most constructive legislative program in the history of Pennsylvania has been secured for the State Department of Forests and Waters. At the close of the session of the General Assem-

GOVERNMENT REORGANIZATION

Broad powers to reorganize the Federal Government, create one new executive department, and change the name of the Department of the Interior to the Department of Conservation are proposed for the President in a confidential revision of the government reorganization bill distributed to members of the Senate Reorganization Committee by Senator Robinson of Arkansas as this issue of **AMERICAN FORESTS** goes to press. The formal discussion and availability of the bill for public consideration is expected at an early date.

The new draft, it is reported, specifically prohibits the President from transferring any of the functions exercised by the Forest Service in administering any laws relating to the National Forests. Similarly the President may not transfer the functions of the Engineer Corps of the Army, or the Mississippi River Commission in administering laws relating to rivers and harbors or flood control.

Aside from these exceptions and the omission of a new department of public works, the bill is said to follow the general recommendations of the Brownlow Report. It would give the Chief Executive broad authority to shift or abolish federal agencies; create a single Civil Service Administrator to supplant the present Commission; establish a National Resources Planning Board to take the place of the National Resources Commission; establish a new Public Welfare Department; abolish the General Accounting Office and substitute an auditor with post-auditing powers; give the President six executive assistants; and limit Senate approval of appointments to positions which the President may consider to be policy-determining in character.

All changes and transfers are contemplated under executive order which shall be submitted to Congress and which may not become effective until the expiration of sixty days, unless Congress shall enact a law providing for an earlier effective date.

bly early in June, it was revealed that forty-six of fifty legislative bills submitted were passed successfully.

The highlights of this broad and constructive program were: Establishment of the Water and Power Resources Board as the State Flood Control Authority; appropriation of \$5,000,000 for immediate flood control work; passage of \$50,000,000 bond issue bill for long range flood control program; passage of encroachment and water obstruction measures which tie in with the flood control legislation; passage of \$10,000,000 bond issue bill for purchasing forest land to control soil erosion, and for reforestation purposes; establishment of a Bureau of Parks, which will permit the department to develop a chain of state parks throughout Pennsylvania; passage of a stream pollution measure.

Secretary Bogardus, who has led the fight for flood control in Pennsylvania, gained his greatest victory when the Legislature passed the "key" flood control bill. This measure not only sets up the Board as the state agency, but also restores to the Commonwealth the power of eminent domain, and also permits the state to construct dams which at any time in the future may be utilized for power.

Under the new legislation, the Department of Forests and Waters will also be able to develop park and recreational areas throughout Pennsylvania.

Work has already begun on these proposed areas and it is the hope of Secretary Bogardus that in the near future Pennsylvania will be able to take its rank as one of the finest park states in the nation. More than 7,000,000 people visited state parks last summer, and a greater number of visitors are anticipated this year.

CCC VALOR AWARDS

Robert Fechner, Director of Emergency Conservation Work, announced early in June the award of the Certificate of Valor to five Civilian Conservation Corps enrollees and former enrollees for acts of heroism beyond the regular call of duty.

The deeds of valor for which the enrollees were commended included the rescue of a truck driver from the submerged cab of a truck which had fallen into a river, the rescue of a boy caught in a moving bulldozer, and rescues by three of the enrollees of persons from drowning.

Including the five citations just made, twenty-two Certificates for Valor have been awarded to CCC enrollees since the corps was established in the spring of 1933.

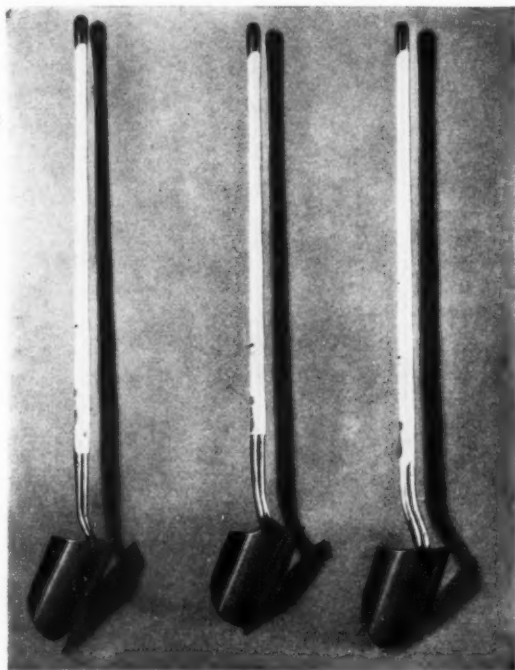
The certificates were awarded to the following men: Walter Lake, Newark, New Jersey, former member of Company 3260; Woodrow Adams, Clayton, New Mexico, Company 3835; Charles Grant Fowler, Renshaw, Illinois, Company 695; Francis McNamara, Calais, Maine, Company 1131; and Anthony Jaksa, South Virginia, Minnesota, former member of Company 2710.

PARK PLANTINGS SOAR

The 1937 tree planting program for National and State Parks provides for the planting of approximately 20,000,000 seedlings this year. The seedlings, grown in National and State Park nurseries developed wholly or in part by the Civilian Conservation Corps, will be planted by CCC enrollees under the supervision of the National Park Service.

The CCC has doubled the number of nurseries in National Parks and at least tripled the number in state parks, it was disclosed. The trees produced in these forest nurseries will be used in reforesting areas within the parks where scars have occurred through fire, tree disease, or necessary construction of roads and other facilities for visitors, and also in aid in halting erosion.

Nurseries in thirty-four state parks scattered throughout twelve states produced 20,948,683 plants in the fifth and sixth CCC enrollment periods, April, 1935, to April, 1936, the latest date of report.



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"A Borg-Warner Product"

This steel used in the manufacture of Ingersoll Shovels has an interlocking mesh-grain structure which gives unusual resistance to splitting and curling. It is surprisingly tough, light in weight and holds a cutting edge unusually well.

Ingersoll Shovels are available in all types and grades, for every purpose, and in a price range to meet competition. Round or square point shapes, black or polished finishes. • (The Alloy, A and B grades, heat treated.)

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Aermotor Towers are being used in constantly increasing numbers by our National and State Governments for the protection of our forests, and by large lumber companies for the preservation of timber.

They have, also, proved quite popular as observation towers at public resorts.

Designed for easy erection, they are protected for long life by special hot process galvanizing after all work of fabrication has been completed.

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Offers thorough training in technical forestry, preparing for Federal, State and private work.

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Opportunity is given to specialize in forest production, wood utilization and range management.

Large logging and milling operations, important wood-working industries and extensive Federal, State and private forests are near at hand; 7,000 acre experimental forest 15 miles from campus. Excellent opportunity for summer employment.

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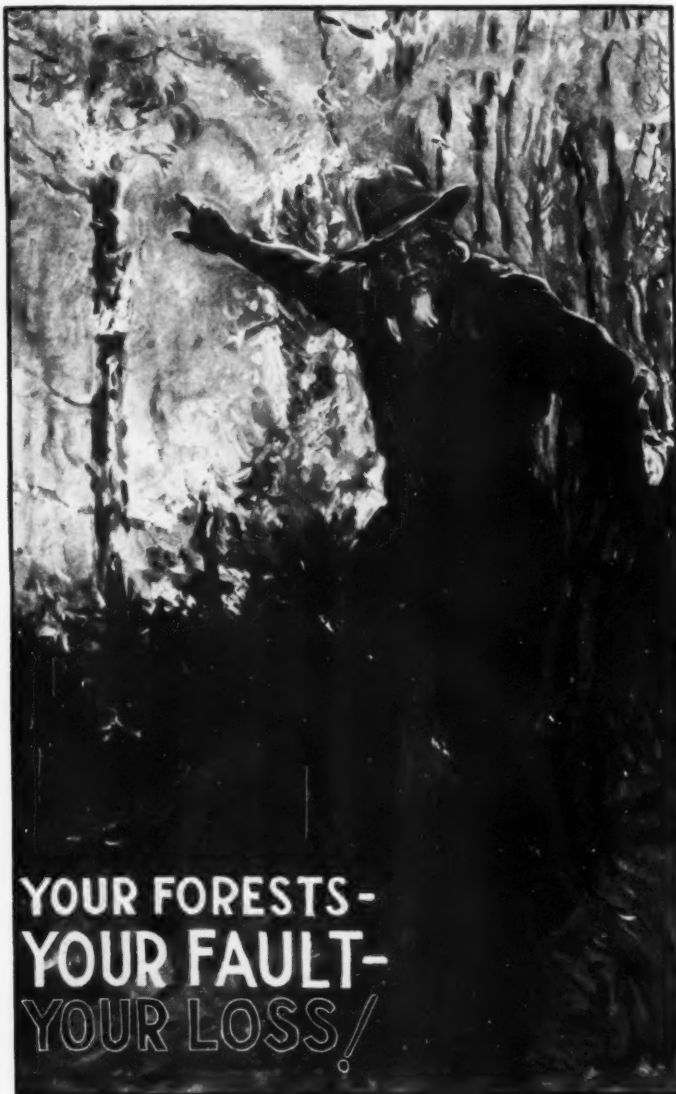
NOTED PAINTER AIDS IN WAR AGAINST FIRE

President Roosevelt on June 10 accepted for the government the James Montgomery Flagg painting showing Uncle Sam in the uniform of a Forest Ranger pointing toward a burning forest and the words "Your Forests—Your Fault—Your Loss." It is the noted painter's contribution to fire prevention and will aid the Forest Service in a campaign to halt the economic and recreational losses following forest fires that sweep over 40,000,000 acres each year.

Through the aid of cooperating agencies poster copies of the painting are to be distributed throughout the country.

F. A. Silcox, Chief of the Forest Service, commenting upon the forest fire prevention painting, said:

"Mr. Flagg has gone straight to the essential point in the problem of fire control—the human element. His title tells the whole story in rapid-fire style. America's forests are literally 'Your Forests.' Forests, no matter where they are, under private, state or federal ownership, influence the daily lives of millions of people



It was Mr. Flagg's "I Want You," called by the press "the greatest war poster of all time," that established the familiar Flagg "Uncle Sam." More than four million copies of this work were distributed by the government and publications with a circulation of more than ten times that number reproduced it, many in full page size. The original painting now hangs in the Smithsonian Museum in Washington.

"Your Forests—Your Fault—Your Loss" now begins a nation-wide tour.

directly dependent for a livelihood on forest products, and additional millions who use the forests for hunting, fishing, camping, and other forms of recreation. Green forests protect watersheds and exert a powerful control on the sources of floods.

"The second part of Mr. Flagg's title—'Your Fault'—means just this: ninety per cent of all the forest fires in the nation are man-caused. Because they are caused by man, they are preventable.

"Due to the close interrelationship between the forests and our everyday life, the



Finish of Final, Australian Championship Chops.

Again this year—Plumb wins!

See the action in one of the ten singles events in the Australian Championship Chops held at Sydney, Australia. Axes from various parts of the world were used in these contests. Nine winners used Plumb Axes!

At the recent Adelaide Centenary Show, winners in all seven chopping events used Plumb Axes! At the Brisbane Show, nine out of ten events were won with Plumb Axes!

No accident causes Plumb to repeat these triumphs year after year...for Plumb Axes save champions vital seconds in chopping time.

The Plumb's razor-keen edge bites deep; specially tempered steel stays sharp longer. Its blade is scientifically tapered to ROLL chips, free itself for the next cut. Its handle is hung to an exact standard—a perfect balance that makes it swing true, with all your force behind the blow.

These are the qualities you want in an axe for everyday chopping. Get this Axe of Champions from your hardware dealer or supplier. It costs no more to own a Plumb.

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DREADNAUGHT SINGLE BIT MICHIGAN

Made of one piece of high-grade steel—not two pieces welded together! Hardened for a depth of two full inches and toughened to hold a keen edge. Furnished in 3 to 5½ lb. weights.



CHAMPION SINGLE BIT DAYTON

Ground in a fan-shaped, 3-point grind to give better clearance in the cut. Hand-honed bit removes the wire edge and prevents crumbling and dulling of the edge. A super-axe! A racing axe for the chopping expert.

Other patterns and sizes for every chopping need



phrase 'Your Loss' becomes equally true. It may reasonably be said that when a forest burns, everybody loses. Mr. Flagg has made a valuable contribution in the fight against forest fires which burn annually over an area almost as large as the entire State of Washington."

A SKY-RIDE OVER RAINIER

Mount Rainier, "the mountain that was God" according to Indian myth, and beautiful Mount Rainier National Park, Washington, was described from the cabin of the United Air Lines' "Mainliner" Sunday, May 23, in the fifth coast-to-coast hook-up over the Red Network of the National Broadcasting Company, in which the United Air Lines is cooperating with the National Park Service of the Department of the Interior.

Superintendent Tomlinson and members of the staff of Mount Rainier National Park described from the air the spectacle presented by the live glaciers, extending like the arms of a colossal octopus down the sides of the mighty mountain, the volcanic fires of which are not yet extinct. Travelers who are well acquainted with Switzerland have pronounced these glaciers comparable in magnitude and scenic beauty to the long-famous glaciers of the Swiss Alps.

Broad belts of alpine meadows, two miles in width and painted in rainbow vividness by the millions of many-hued flowers growing waist high in this rich volcanic soil, separate the zone of the ice fields from that of the luxuriant forests that clothe the lower slopes of the mountain. Through this enchanted wonderland wind endless trails for the benefit of hikers, with shelters and overnight camps spaced at convenient intervals. Mount Rainier National Park is open the year round and is world famous for its snow sports.

THE BRYANT ELM

In the May issue of AMERICAN FORESTS, one of the illustrations used with the article "A Billion Elms At Bay," that of the stem of a magnificent elm on page 215, was a photograph sent by Mrs. F. E. Heffner, of Albany, New York, of the Bryant Elm near South Williamstown, Massachusetts. This picture was taken in May, 1934, when the great tree was over four hundred years old.

Charles Lathrop Pack —An Appreciation

(Continued from page 336)

Elected to the presidency of The American Forestry Association in 1916, he served through 1922 and saw the organization through some of the stormiest and most critical days of its whole career, when its work was buoyed up and carried forward largely through the force and inspiration of his enthusiastic personality and his more than generous financial support, when other public service organizations were falling by the wayside. During the World War he organized and carried on, as the war work of the Association, the National War Garden Commission, calling on all Americans to join the war garden army and so lessen the drain on the country's food supplies. Specialists in food production and preservation were engaged and a tremendous campaign of educational publicity carried on which resulted in the planting of millions of home gardens. A nation-wide survey showed that in 1918 alone the war gardeners of America answered with a total of over five million gardens, with products valued at \$525,000,000. For this work Mr. Pack was honored at home and abroad.—France awarding him the decoration of *La Merite Agricole* and, in 1919, the *Societe National d'Acclimatation de France* awarded him its great medal. Space limitations forbid our listing of the many other honors and distinctions conferred upon him by the nations of the world.

In 1923 he founded and organized the American Nature Association, publishers of *Nature* magazine, and the American Tree Association, designed primarily to encourage and stimulate tree planting in America. In this work nearly five million copies of the Forestry Primer have been distributed free of charge. In 1929 in order better to promote the more scientific and professional phases of forestry, he established the Charles Lathrop Pack Forest Education Board, which awards fellowships for advanced study to foresters and potential foresters showing exceptional ability, and in 1930 the Charles Lathrop Pack Forestry Foundation was established to forward the social-economic goals of forestry through specialized educational projects. Later at Yale and the University of Michigan foundations were established for special forestry study. His keen interest in open-

ing up the educational field in forestry by the most intensive methods inspired his giving without stint of his time, energy and fortune.

Charles Lathrop Pack has passed to the great beyond but the influence of his work, his ideals and his good deeds will go on. In the vibrant green trees of the forests he caused to be planted shall be found his greatest monument,—here and on the battle scarred fields of Europe.

INTERNATIONAL WORK CAMP CONFERENCE

The Second International Work Camp Conference will be held at Hertenstein, in the Canton of Luzern, Switzerland from September 5 to 9 inclusive, according to a recent report from the International Student Service, 8 West 40th Street, New York City.

The Work Camp Movement, says the announcement, has developed along differing lines and in several countries has found official or semi-official recognition. This development is taken into account in the plans for the conference.

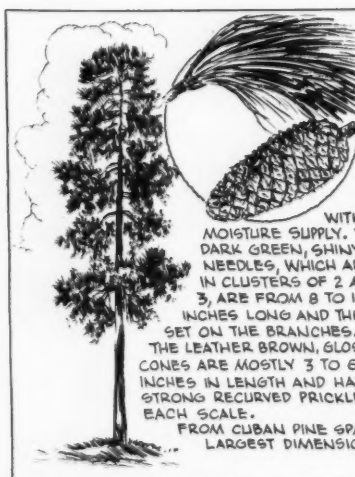
The program will include reports on the organization of Work Camps in the several countries, discussion of problems connected with their administration, and visits to several Work Camps in Switzerland. The cost of the conference, including excursions, and bus transportation from Hertenstein to Zurich, and the registration fee is \$16.50.

PARK SERVICE TRAINING SCHOOL

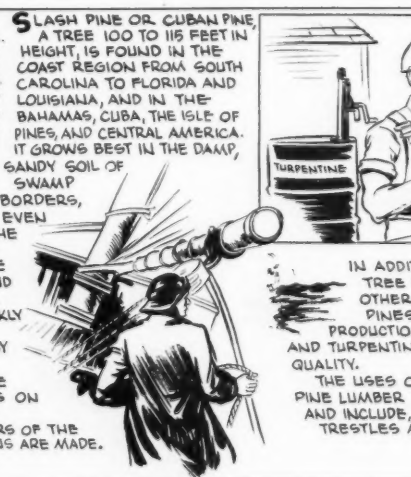
The National Park Service is holding the thirteenth annual session of the Yosemite School of Field Natural History in Yosemite National Park, California, conducted from June 21 to August 7. The school offers intensive training looking toward seasonal or permanent work in the positions of ranger, ranger-naturalist, custodian, or park naturalist in the various National Parks and Monuments.

The number of students is limited to twenty, fourteen men and six women, and there is a prerequisite of sufficient educational background in the natural sciences for admission. No tuition is charged and expenses are reasonable. Field work predominates. The school spends a week on projects in connection with a research area and two weeks on a pack train trip in the High Sierra studying the flora, fauna and geology of the region.

TREES AND THEIR USES—No. 26—SLASH PINE




SLASH PINE OR CUBAN PINE. A TREE 100 TO 115 FEET IN HEIGHT, IS FOUND IN THE COAST REGION FROM SOUTH CAROLINA TO FLORIDA AND LOUISIANA, AND IN THE BAHAMAS, CUBA, THE ISLE OF PINES, AND CENTRAL AMERICA. IT GROWS BEST IN THE DAMP, SANDY SOIL OF SWAMP BORDERS, WITH EVEN MOISTURE SUPPLY. THE DARK GREEN, SHINY NEEDLES, WHICH ARE IN CLUSTERS OF 2 AND 3, ARE FROM 8 TO 12 INCHES LONG AND THICKLY SET ON THE BRANCHES. THE LEATHER BROWN, GLOSSY CONES ARE MOSTLY 3 TO 6 INCHES IN LENGTH AND HAVE STRONG RECURVED PRICKLES ON EACH SCALE. FROM CUBAN PINE SPARS OF THE LARGEST DIMENSIONS ARE MADE.



IN ADDITION, THE TREE EXCELS ALL OTHER NATIVE PINES IN THE PRODUCTION OF ROSIN AND TURPENTINE OF HIGH QUALITY. THE USES OF SLASH PINE LUMBER ARE MANY AND INCLUDE BRIDGES, TRESTLES AND DOCKS.

ON ACCOUNT OF ITS STRENGTH AND STIFFNESS, IT IS WIDELY USED FOR RAILROAD CARS, WHILE ITS HARDNESS AND WEARING QUALITIES RANK IT AS ONE OF THE LEADING WOODS FOR FLOORING AND STREET PAVING—BLOCKS



DYNAMITE *today...*

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**TOMORROW'S
 FERTILE
 FIELDS!**



SOME swamp land is best adapted to the production of crops—some to the production of fur and feathers.

By blasting drainage ditches to carry off standing water, dynamite transforms low land into fertile fields. By straightening streams, by keeping ditches clean and free from clogging vegetation, silt, cave-ins, dynamite prevents flood waters from *drowning* young crops. By removing stumps and boulders, dynamite turns land fit only for pasture into

tillable soil. By loosening soil, dynamite promotes better yields from trees in less time.

Du Pont has long specialized in making dependable explosives for every purpose in forestry and agriculture. Whatever your particular

job, there is a du Pont explosive that will give you dependable performance at minimum cost . . . delivered *on time* wherever you want it. And if you'd like technical assistance, you will always find du Pont glad to give it to you.



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STATE OPPORTUNITY IN CONSERVATION

(Continued from page 333)

return for the application of satisfactory Forest Practice Rules. Removal of obstacles to ownership would justify the requirement that the property be currently well managed. It is essential, however, that any public authority, which undertakes to develop a *quid pro quo* relationship with any group, be prepared to carry out its part of the bargain. There may be skepticism about industry's good intentions, but public authority has the advantage of the legislating power and should assume the initiative. It always can crack down, if necessary.

There are many who advocate the use of Federal authority because they have not confidence in cooperative effort nor patience with the trial and error method. They propose to settle the whole forest conservation problem, at once, by Federal action. Such action would involve regulation of harvesting methods upon private lands; it would extend to forest land management, even to manufacture. Apparently the only phase of the problem not embraced in such a concept is the practical question of how to find markets for greatly increased volumes of wood.

Such a Federal approach appears to offer certain advantages. The Congress can find money with which to experiment for the public good. The forestry problem appears to many to be inseparable from general economic and social problems; certainly there are considerations which reach beyond State boundaries. There is wide variation among the States in constitutional authority, in laws and the excellence of their administration. As legal bases are established for attacking nationally the country's social and economic problems, all such deficiencies may be dealt with firmly by higher authority. One of the objections to dependence upon local efforts to bring about forest management is the responsiveness of State legislative and executive branches to local pressures; the Federal Government can find ways to overcome such local resistance.

Leaders in the lumber industry believed for a time that the national forest problem could be solved under the National Industrial Recovery Act. Today few believe that a solution can be found

through controls from Washington. There is reason to question the capability of the present Congress to formulate and enact a cure-all. From time to time, word has come out of the White House that the President intends to present to the Congress a comprehensive program of forest legislation. That promise has recently made its fourth annual appearance. Possibly one of the reasons why such a program has not been presented is because the Chief Executive's judgment warns him of the difficulties involved. It should be possible, however, for the Administration to make certain beginnings, within the sphere of activities recommended by the recent Forest Conservation Conference.

We should not be entirely disheartened by Federal procrastination. After all, the most urgent part of our problem is to keep trees growing upon forest lands. Fire protection and restocking provisions will do this. Problems of ownership and long-time management (including social responsibility, taxation, etc., etc.) are so complex as to require both time and trial for their solution. If most of the marginal and forest lands in any commonwealth can be kept in fair condition of regrowing, the public need not fear the effects of competition among industrial users of the wood. If all the forest regions are brought to reasonably high productivity, the result is an adequate national forest establishment. In the last analysis, even production control will be solved by the growing power of the soil.

The State Foresters have offered to join in a cooperative attack upon the problem. Naturally they would like to have Federal aid to implement local initiative. Naturally they would prefer to have regulatory powers over private lands reserved to State authority. Reasonably enough, they would like to see their Departments strengthened and used as the liaison between the Federal Government and private owner or operator. Spokesmen for industry agree with them, and accept their challenge, believing that each group, including the Federal, has something valuable to give for what it may expect to receive.

TRAIL RIDER PARTIES STILL FORMING

There is still time to reserve a place in the August and September Trail Rider parties. The expedition into the Gila wilderness of New Mexico leaves Albuquerque on August 3 to spend thirteen days in the land of the cliff dwellings; the expedition into the Sawtooth Mountains of Idaho leaves from Shoshone on August 2, and that into the Olympic wilderness of Washington will leave from Seattle on August 19 to explore one of America's most beautiful last primitive places. Expedition No. 7 goes from Asheville, North Carolina, on September 14 for twelve days in the Great Smoky Mountains. Write to The American Forestry Association for information.

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Flood Control Sought

(Continued from page 354)

"In coniferous forests, and in hardwood forests when in leaf, the crown cover lessens the violence of impact of heavy rains and the water reaches the ground in moderate fall, thus aiding in retardation of rate of runoff. Of importance, further, is the mechanical check to surface flow by the stems of the trees and other vegetation and by the debris and litter on the forest floor. Every such check in rate of flow increases opportunity for absorption of water in the soil to the limit of its capacity."

Forests and proper use of cleared land, however, cannot alone control all flood waters even on upland streams, he pointed out. "In many circumstances local floods can be effectively controlled only by the construction of detention reservoirs and other engineering works. Here the work of the forester and agriculturist supplements that of the engineer."

Edmund Secrest, state forester of Ohio, and president of The Ohio Forestry Association, told of the part public forests, particularly state forests, play in the conservation of water and retardation of floods. Maurice L. Reddy, director of Disaster Relief of The American Red Cross, presented the human need of flood control.

Dr. Wilson Compton, manager of the National Lumber Manufacturers Association, declared that the forest industry can help toward flood control in a practical way—by conservation and sustained production of forest resources. "But," he said, "the only way this can be done from an industrial standpoint is to continue the wise and liberal use of wood. The American people must not be deceived into the belief that stoppage of the use of wood is, in any constructive sense, forest conservation. There is no surer way to destroy forestry progress than to destroy its economic incentives. Timber is the one readily reproducible natural resource. Forest conservation distinct from forest reproduction is merely the form without the substance."

Describing what he termed "a flood that must be checked if conservation is to prosper in America," Gifford Pinchot, former governor of Pennsylvania, vigorously attacked that part of the proposed governmental reorganization plan which would create a Department of Conservation in the present Department of the Interior.

"Conservation cannot be confined to any single department," he said. "Conservation is too big for that. The fact is that every single department of the Federal Government deals with conservation in one form or another."

The plan proposes to leave conservation on private lands to the Department of Agriculture, he said, while it transfers conservation on public lands to the re-named Department of the Interior. "Thus it would create confusion twice confounded under the guise of simplification, and split up natural units of administration in the name of bringing related subjects together."

Under this "impossible arrangement," the former governor said, the National Forests would be given to a Department of Conservation, while the 30,000,000 acres of privately owned timberlands inside the boundaries of the National For-

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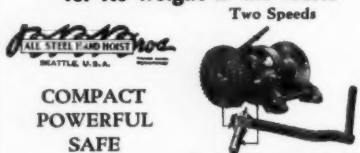
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ests would be left to the Department of Agriculture.

"But forest research would not go into the National Forests. Forest research and administration would be separated, and that is always and everywhere thoroughly bad."

He pointed out also that under the proposal soil conservation on western farms would be the responsibility of the Department of Agriculture, while soil conservation on public lands surrounding these farms would be in the hands of the Department of Conservation. In fact, he said, the same situation would apply to the work of the Biological Survey, the Bureau of Fisheries and the Bureau of Animal Industry.

"Right now," he said, "when disastrous floods and soil erosion are rapidly destroying the fundamental basis of our civilization—when appalling dust storms are carrying the rich top soil of Colorado and Kansas to the Atlantic Ocean—when lands are being abandoned on an unprecedented scale—when agricultural relief rolls are the greatest ever known—when farmers need help as they never needed it before—is this the time to attack and break up the Department of Agriculture?"

"This—this plan to cripple, hamstring and divide the government's conservation work—is the flood that needs to be checked."

On June 1 the conference inspected after-flood scenes and river works designed to deal with flood waters along the Ohio River. For the inspection trip the "Island Queen," one of the largest river boats in the world, was chartered. Stops were made at New Richmond and at Point Pleasant, two river communities severely damaged by the tragic flood early this year. Colonel Dabney Elliott, district engineer, Ohio River Division of the United States Army, told the conference during the trip of some of the things engineers had learned from the 1937 flood. Lieutenant Francis T. Bartlett, United States Naval Reserves, served as commentator on Ohio River history.

With Samuel T. Dana, dean of the School of Forestry and Conservation, University of Michigan, presiding, the afternoon session on the boat was given to discussion of the influence of vegetal cover in flood control. Those participating were Sherman M. Woodward, member, Subcommittee on Vegetal Cover, National Resources Committee, and chief water control planning engineer of the Tennessee Valley Authority; C. L. Forsling, as-

sistant forester, in charge of Research, United States Forest Service; C. C. Chambers, chief engineer, Muskingum Conservancy District, and Walter Lowdermilk, assistant director of the Soil Conservation Service.

On June 2 the conference moved to Zanesville, with a stop en route at the Hocking State Forest, to study the Muskingum Watershed Conservancy District, the first and only large scale cooperative effort on the part of the Federal Government, the state and local communities to deal with the flood problem in a given drainage basin.

A banquet given by the Muskingum Watershed Conservancy District and the Zanesville Chamber of Commerce officially opened the Zanesville conference. Judge Robert N. Wilkin, former Judge, Ohio Supreme Court, served as toastmaster, and the speakers included Charles West, Under Secretary of the Interior, Congressman Robert T. Secrest, of the 15th District of Ohio, Earl W. Tinker, assistant chief, United States Forest Service, and others.

The conference was concluded on June 3 after an inspection of the Muskingum Watershed Conservancy District, and an official luncheon at the Union Country Club, at Dover.

Resolutions adopted by the conference, in addition to the one urging appropriations to make the Flood Control Act of June 22, 1936, immediately effective were as follows:

That because the Brownlow Report on Governmental Reorganization seemingly does not recognize that agriculture and the conservation of organic resources of the soil are governed by inseparable and indivisible natural laws, a review be made of that part of the Report which has to do with agriculture and conservation to the end that provision be made for integration and coordination in which all departments and agencies, federal and state, can share.

That federal and state appropriations to finance the work now under way to control the Dutch elm disease be continued.

That the Federal Government enlarge its forest acquisition and development program in the Ohio Basin in the interest of flood control.

That the President and Congress of the United States provide appropriations that will encourage and assist state forest development.

That state appropriations for fire control be increased to the end that the combined efforts of the states and the Federal Government may more nearly meet the needs of national forest fire protection.

That efforts be advanced by federal and state agencies to conduct research which may serve to conserve soil waters.

That all public school authorities and other organizations having to do with shaping the teaching in the public school system of conservation enlarge their efforts to the end that the youth of the nation shall have an understanding of the relation of the natural resources to the public good.

That inasmuch as the Emergency Relief Projects of the Federal Government have advanced to a considerable extent the forestry and other conservation movements in this country, the President be urged to make additional allocations for similar projects from any emergency re-

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lief funds that may be appropriated by Congress.

That proposals to tunnel under Rocky Mountains National Park, in Colorado, to divert water from the Colorado River for irrigation purposes constitutes an invasion into the natural conditions for whose preservation the National Park was established, and that it therefore be vigorously disapproved.

Backwoods Trailin'

(Continued from page 331)

conveniently parked with their owners impatiently waiting for the official hour to cast the first line.

You are going to see more of these outfits, of all sizes and descriptions, factory-built succeeding the home-made, used for hunting and similar recreational purposes in the next few years. And their advent is not going to detract one bit from the thrill of the chase. Rather it will add a little more glamour and romance to it, and bring the owner a little closer to the heart of nature.

Permanent camp sites in most states are at a premium these days, and the poor fellows from way back yonder, with only a few days in which to uphold the fine old heritage of fishing and gunning, have no other recourse than to adopt a means which will enable them to contribute their share in accomplishing this worthy purpose. The trailer is that means.

Another thing: No matter how a person spends his time, whether in a cabin or a trailer, he still has to eat and buy other necessities of life. And that, in the last analysis, will surely benefit all kinds of business generally. To try to stem the tide of this unique army is futility itself. Perhaps some day camp sites ready with electrical connections and other conveniences will be established in good hunting areas to meet the requirements of these modern hunters in the same manner they are developing for pleasure trailers.

I learned from official sources since writing this article that Pennsylvania's mountains were full of these wheeled cabins during the hunting season recently closed. Some were welcomed, others were not.

There is always that element among any class which thinks only of itself, and I was told that in some instances trailer parties parked their outfits right up against the back doors of permanently established camps and encroached upon their hunting territory, whether private or not.

Such lack of respect is certainly a breach of outdoor etiquette. Therefore it behooves all conscientious trailer travelers to see to it that their "comrades on wheels" obey the unwritten law of the true big game hunter and choose locations which are not occupied.

After all, it makes not the slightest difference how a man goes hunting, as long as he plays the part of a sportsman wherever he may be.

NOTICE

The flood control papers presented at the Annual Meeting are being printed and copies will be sent members upon request.

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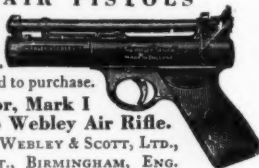
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(See Announcement on 3rd Cover)

CHINA'S TREES OF THE FUTURE

(Continued from page 349)

the hillsides is practicable only for a few years, because of the heavy run-off of the abundant rains which wash the topsoil down into the valleys. Thus agriculture impoverishes both the soil and the farmer in this case.

Our path had now taken us over a series of ridges and down a narrow valley until the Red Cloud Mountains, our final destination, could be seen to the northeast. We passed four giant buttes, four or five hundred feet high, marking the beginning of an interesting red sandstone formation of which the Red Cloud hills are composed. The distant mountains of the Mei Ling seemed nearer and we could make out snow on the higher peaks.

By nightfall we reached the village of Lung Wong Kung and were fortunate in finding a place to sleep in the shop of the vender of tobacco and opium.

We foreigners were heartily welcomed and given bed boards in the back room. Very shortly the entire male population of the village came in to see us. There are few more curious folk than the Chinese villagers, and foreigners were "rare birds" in those parts. A number of these fellows were charcoal burners, this form of fuel finding a ready market at Shiu Chow. Native pine, the chief source of supply for this industry, is scarce in the region, and the continued inroads on the rapidly diminishing supply will soon mean complete denudation of the hills, where this has not already taken place. When this stage is reached a large part of the income of these villagers will be lost.

In spite of late visitors, noise and opium smoke, we managed to get a little sleep. The next morning, after cooking our breakfast of rice, greens and fat pork, we hired a boat and were paddled down a branch stream into the Yan Fa River. The river cut down a narrow gorge through one of the most interesting geologic regions in China. Worn down by rain and river erosion for centuries, the horizontally striated sandstone cliffs of the hill country have been molded into grotesque columns and figures. Poling up the river to the foot of Taan Ha Shan we passed obelisks, and structures resembling human figures, rising sheer above the narrow gorge.

We landed below Taan Ha monastery and climbed the many steps hewn out of rock up to the huge, brass-studded gate. Several pulls at the bell rope were necessary before a face appeared at a loop hole above the gate and carefully scrutinized the party. Finally the great gate swung open and a friendly monk showed us in.

The steep slope and ravine above the monastery were covered with a luxuriant vegetation. Broadleaf evergreen trees grew in the more sheltered ravines, along with bamboo and tangles of shrubs and lianas. While no large trees were seen, evidence that even these hills had been lumbered and burnt over in the past, the dense vegetation showed how forest cover would come in when spared the ax and fire for a time. For miles beyond the gorge of the Yan Fa River hills stretched away into the distance, a few forest-covered. Most of them, however,

supported only grass, where not too heavily eroded.

For the forester or the rural economist, even the sketchy observations made on our trip lead to the conclusion that there are large areas of unused land in a country where land utilization is of primary importance. The forester sees that the hills will quickly support a forest cover if only left alone. With an annual precipitation of over seventy inches a year, a program of afforestation does not present the same difficulties here that are met in the barren wastes of the mountainous areas in the northwest of China. At the same time the forester sees that a forest cover is necessary to prevent the type of erosion which is particularly noticeable where crop cultivation has been pushed up steep hillsides. Further, he knows that forests will at least lower flood areas in times of heavy rains and hold back the rushing water which carries tons of earth into the rivers, filling up the channels and blocking navigation, as well as ruining agriculture and menacing human life.

Adequate policing to prevent fires would eventually result in the re-establishment of forests in this warm, subtropical region, but direct economic benefits to the people will be hastened by a reforestation program. A forest cover will not only prevent erosion and mitigate flood dangers, but will also yield tree crops. Ordinary fuel wood is desperately needed in China. Coal, as yet, is not mined in large enough quantities to be of great importance as a fuel, and it is questionable whether the farming population of China will ever find it cheap enough for wide use.

But today even the price of wood is prohibitive. One hundred catties (130 pounds) of firewood bring three dollars on the Canton retail market. The villagers could not afford such prices even if the wood were available. They must resort to shrubs, grass, and even grass roots for fuel. There is no reason why almost every village in this great southern area should not have its village woodlot on the neighboring hillsides, thus adding to the income of the farmers.

As for timber, except for a few logs from the remaining forests and poles from the plantations of China fir, set out by the aboriginal tribes of the hinterland, Kwangtung province is entirely dependent on imports of hardwood from Indo-China and the Straits. True, there are large forests in the highlands of Yunnan and Szechuan, in the far west, but these will be inaccessible for years to come. And even when they are made available, the supply will be less than the demand, in view of the population of over 450,000,000 people inhabiting all of China.

The character of the reforestation will depend on local conditions. Where native pine is already sparsely established, gaps may be filled in with seedlings. An under-story of China fir or tolerant broadleaves could be established later. Where the soil is especially barren and in need of building up, legumes such as Ipil-ipil (*Leucaena glauca*), a fast-growing legu-

minous tree successfully established on the hillsides of Luzon in the Philippines, should be tried. Tree crops such as persimmon and tung oil may be planted where site conditions are suitable. Nut and fruit production will yield more rapid returns and may be combined with timber production on the better sites.

A sound rural program must necessarily include an intelligent use of the land. Although China needs more food crops to feed her teeming millions, she will never

be able to grow them at a profit on her steep mountain sides. Let her take her cue from some of the northern European countries or from Canada, a large part of whose national income is derived from the forest. Along with agriculture, forests yield important economic returns and permanent benefits to the land. I can see China's forests of the future helping to give a "new deal" to the Chinese farmers, the backbone of the nation.

A GALLANT FISH PASSES

(Continued from page 335)

time, passing from the scene together.

At the turn of the century the handwriting was unmistakable upon the wall. At its annual meeting in New York in 1902, the League of American Sportsmen passed a resolution urging the closing of all fishing in the upper Manistee River, to protect the grayling stock remaining there. The grayling was then extinct over much of its range but enough still remained in the upper Manistee to restock that and other streams to repopulation, according to W. B. Mereshon, renowned and respected sportsman of Saginaw, who sponsored the resolution.

But the plea fell upon deaf ears back in Michigan. In the summer of 1936, when the last chapter of the story had been written, Mr. Mereshon came across a copy of the old resolution in his files and sent it to me. "I made every effort to get the upper part of the Manistee shut off from fishing to save the grayling that were still there," he wrote. "I appealed personally to Governor Bliss, but it did no good. The local senator said he did not propose to have his people deprived of fishing."

More than twenty-five years later this same farce was repeated, when Michigan threw open to fishing a reach of the Otter in which the dying race was making its final stand. Public opinion forced a reversal of this action after two or three years, but the respite came too late.

A little more than a decade ago the Michigan Conservation Department turned its attention to artificial propagation of the grayling once more, in the hope of accomplishing in hatchery troughs what man-harassed nature obviously was failing to do,—save from total extinction the historic fish to which the State held exclusive claim.

Two expeditions visited the Otter in the summers of 1924 and 1925, in charge of State fish men, to take a breeding stock of the rare fish. They found the grayling fairly plentiful and little difficulty was encountered in seining a sufficient number to suit the plans.

The fish were transported, appropriately enough, to the State hatchery at Grayling, Crawford County village named for their forebears, and the attempt at artificial rearing was begun. But both years the attempts ended in failure and the remnant of the breeding stock was released finally in wild streams in that section. Nothing has been heard of those fish since.

The work lagged then until the early fall of 1931, when a State expedition again visited the Otter in the hope of obtaining a fresh breeding stock. Conditions were found to be greatly changed. The grayling had largely disappeared from the reaches of the river where they had always been found,

and several days of seining yielded a total of but five of the rare fish. On this meager handful the State pinned its slender hopes for a time, but these fish, carefully guarded at a private hatchery in the Lower Peninsula, died or disappeared and the attempt again came to naught.

A year later the State began the construction of a combined trout rearing station and experimental grayling hatchery on the Otter, near the center of the grayling section of the stream. It was believed this held the greatest hope of all of preserving the fish from extinction. If a breeding stock could be taken they could be held there in their native waters, under conditions known to be suitable, and it seemed that success at last might crown the attempts to propagate the Michigan grayling artificially.

The station was completed and put into operation as a trout rearing plant in 1933. Repeated attempts to take even a small breeding stock of grayling from the neighboring reaches of the stream failed, however. In September, 1934, a small CCC

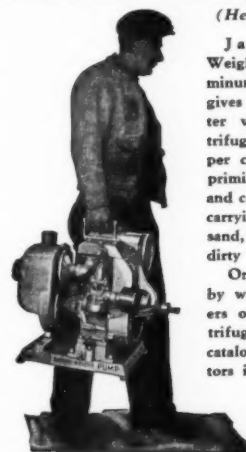


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camp was established at the station and for weeks a thorough attempt was made at seining the Otter. No grayling were taken. The same effort was repeated in the spring of 1935. With the subsiding of the spring freshets to a level where seining operations were possible a camp was moved to the Otter once more. The results were nil.

Since then the Michigan Conservation Department has folded its arms, accepted defeat. And at last it admits, reluctantly, that the grayling is for all practical purposes extinct, gone from the Otter to the last fish or at least to a dwindling remnant on which no shred of hope for the future of the species can be pinned. No further effort to take a breeding stock will be made. For the first time in the recorded history of the Otter, not one lone grayling is known to have been taken from the river by fly fishermen in the season of 1936.

Two species of grayling still remain in the waters of North America, the Montana and the Arctic. Both have fared better, much better, than their ill-fated kinsman in the rivers of Michigan, the grayling of which Fred Mather wrote: "His pectorals are olive-brown, with a bluish tint at the end; the ventrals are striped with alternate streaks of brown

and pink; the crowning glory is the immense dorsal, which is dotted with large, brilliant red or bluish-purple spots, surrounded with a splendid emerald green which fades after death—the changeable shade of green seen in a peacock's tail."

During the last five years Michigan has carried on experiments in propagating Montana grayling, with eggs obtained from the conservation officials of that State, and the work has succeeded to a point where several plantings of the alien grayling have been made in streams that once boasted the native Michigan variety.

Those fish will hardly take the place, however, of the original Michigan grayling. What the heath hen was to Massachusetts in its final years this gallant fish of the banner-like dorsal was for a brief time to Michigan—a waning hope, a sorry example, crying out against the greed and selfishness of the past.

Propagated on the Otter, even in limited numbers, the grayling would have drawn the attention of conservationists everywhere, would have stood forth as a striking instance of the belated salvation, rather than the complete destruction, of a wildlife species. But Michigan waited too long for that.

THE FOREST DRIVES YOUR CAR

(Continued from page 351)

producer gas from raw wood or charcoal is approximately the same, but by an admixture of water vapor to the charcoal gas, its efficiency may be raised compared to wood gas. The question as to which type of generator will carry off the palm is still open, but it is certain that in countries having charcoal production, the plant using charcoal will be more successful.

A generator is started by inserting a burning lighter into the firing aperture. The fuel ignites and a hand-driven or an electric fan creates a draught to bring the fuel to red heat. The fan is cut off when the gas issuing from the open leads burns with a blue flame and the gas is diverted from the open leads into the leads to the engine. The whole procedure of starting takes about five to ten minutes, or even less with charcoal. Generally the engine is started on petrol, and after a mile or two, the engine is switched over to gas, which by that time the generator will be producing properly. This use of petrol to start obviates any waiting for adequate supplies of gas to be forthcoming.

The generator may be attached to the vehicle in a variety of ways, but as it has generally been lorries and tractors that have been adapted to the new fuel, no great difficulties have been encountered, the main point being efficiency and not appearance. As a rule the generator is fixed at the side, just behind the driver's cabin, while the purifier is placed on the other side or under the chassis. The latter arrangement has the advantage of subjecting the purifier to the full effect of the head wind, and thus ensuring good cooling of the gas, which should be at as low a temperature as possible before being introduced into the engine. Private cars have also been equipped with generators. One of the illustrations herewith shows a Panhard with the generator placed in the usual compartment for trunks.

Every evening the generator must be

cleared of the ash, but this is effected very easily and takes less than five minutes; once a week the generator must be completely cleared out, and the filter and purifier thoroughly cleaned. This weekly work consumes about half an hour; then the whole of the piping must be cleaned out about once a month.

One drawback to the use of producer gas was the decrease in power output of the motor compared with petrol. If the engine is run on gas, without any structural modifications, there is a decrease of up to forty per cent of the performance with petrol; this loss may easily be reduced ten to twenty per cent by increasing the compression of the motor, in which case "knocking" is reduced considerably compared with petrol, and by advancing the ignition, which is rendered necessary by the slower speed of explosion of wood gas. Special engines have been built in France and Germany for wood gas, and the designs cater to the special properties of the new fuel. Lorries fitted with generators and such engines are now standard types.

One filling of the generator with wood suffices for ninety to 120 miles, and with charcoal for 150 miles or more. The generator should be replenished before the first charge has burnt down too far, so that variations in the quality of the gas may be obviated. Running on wood gas, the engine is very smooth, and the consumption of lubrication oil is less than with petrol. After stops not exceeding an hour, the engine can be started on gas, but should the stop be longer, a fan must be used to keep up the glow in the generator, or the generator must be started up again from the beginning.

Great economies are effected by using producer gas, amounting often to more than sixty per cent or seventy per cent of the cost with petrol.

To arouse interest in producer gas and to test its reliability, trials have been held in various countries, with complete vindication of claims made. For example, the French

ministries for agriculture and war, acting in collaboration with the National Timber Association, offered prizes in 1934 for a special event. Speed and fuel consumption tests were made with three cars adapted to producer gas on a stretch of 300 miles at Monthlery. The winner was a Panhard running on charcoal gas; it gained 150 points compared with the sixty-four and twenty points awarded to Berliet cars running on wood gas. The mean speeds were about the same, being fifty-five miles per hour for the Panhard, and fifty-three and fifty-two miles for the other two cars. The fuel consumption of the winning car was one-half hundred-weight of charcoal per one hundred miles as against one hundred-weight of small-cut, good quality wood for the other cars. The running costs amounted to about a fifth to a quarter of those for petrol, which in point of cost of operation must be regarded as a great triumph for producer gas.

The time allowed for maintenance, after each stage of the run, was one hour maximum, and for starting from cold (without the aid of any petrol) not more than twenty minutes. It turned out, however, that only thirty minutes were required for cleaning, and not more than fifteen were necessary to start from cold. The whole trial took place without any breakdown, accident or untoward incident. Maximum speeds up to sixty miles per hour were attained, and thirty miles per hour was easily maintained on mountain roads. The average on normal roads was forty-five miles per hour. The results achieved showed that cars running on producer gas were not to be ranked below those using petrol.

The Austrian Economy Board, supported by the ministries affected in Austria, Italy and Switzerland, held a trial run at the end of September, 1934, to test the value of substitute fuels in the conditions met in the Alps. The distance covered was nearly 1,000 miles and took in the most important alpine passes in Austria, Switzerland and Italy. The trial showed exceptionally good results and, in spite of the difficulties of the mountain roads and passes, the private cars attained average speeds of about thirty miles per hour. The time required for starting amounted to but ten minutes at the most for heavy busses and as low as five minutes for private cars.

A trial run from Rome to Paris via Brussels, which took place in July, 1935, again demonstrated the merits of vehicles running on wood or charcoal gas. Private cars attained averages as high as forty miles per hour and lorries up to twenty-five miles per hour. At the speed tests, a private car running on charcoal gas reached fifty-seven miles per hour on the average, while a car running on wood gas touched fifty-one miles per hour.

The German delegation to the International Timber Conference held in London last year traveled from Berlin to London and back in a car running on wood gas, and thus demonstrated the reliability of the fuel. The total distance amounted to 1,575 miles including the runs in England. The 650-mile trip from Berlin to London was covered in twenty-two hours, and the return in twenty-one hours. The wood used varied between beech, oak and birch according to supplies available; sizes ranged between two and six inches, and in many cases the wood used was not only normal fuel wood but waste from parquet factories and broken rind with quite a lot of bark adhering.

In order to stimulate the use of wood and charcoal as fuels in place of petrol, several countries have accorded special privileges and subsidies to purchasers and owners of generators. In Germany an edict of March, 1935, granted new vehicles running on wood or charcoal gas a subsidy of 600 marks, while the adaption of petrol-driven vehicles to producer gas is encouraged by a grant of 300 marks by the state. At the same time it was also decided to proceed with the erection of a chain of filling stations for wood and charcoal fuel.

In France all mechanically propelled vehicles running on wood or charcoal gas have been free of taxes since December, 1934. In Italy a law promulgated in 1933 provided that all new lorries built to run on wood gas shall be free of all taxes; and an edict issued in 1934 extends the freedom from tax to such vehicles as are used in public passenger transport. In addition, all purchasers of such vehicles receive a grant from the state.

In Czechoslovakia vehicles running on wood or charcoal gas are free of tax for three years. In addition to the above mentioned countries, there are many others according similar supports to owners of such vehicles.

The effect of these measures has been to favor the rapid spread of generators for producer gas, and there are already over 2,000 lorries fitted with generators running in Germany, with a monthly accretion of about seventy. The imposition of sanctions on Italy has led to a rapid increase of generators there. In many cities, especially Rome, Milan, and Trieste, the busses have been converted to run on wood gas, and it is no longer a rarity to see a bus or lorry fitted with a generator on the country roads. The same is true in France, where generators are being used as much as possible for military purposes.

Apart from these three countries, where wood and charcoal are being used as substitutes not only for reasons of financial policy to economize in foreign currency, but for reasons of defense, so that in the event of an outbreak of war they would not be dependent on imports of petrol, there are many other countries, with large forest reserves, that have interested themselves in the question. Among these may be mentioned Czechoslovakia, Austria, Switzerland and Sweden. In these countries there are a great number of lorries, busses and tractors fitted with generators.

With the development of producer gas generators, new outlets will be opened for great quantities of fuel and waste wood. At present there are enormous quantities of fuel that cannot find a market and lie rotting in the forest.

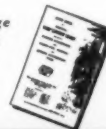
For instance, it is pointed out in France that there are forests of more than twenty-five million acres, yielding more than eighteen million cubic meters of fuel wood annually. Of this enormous quantity, more than a third cannot be sold owing to the competition of other fuels. It is stated that the existence of the French forests is threatened if the market continues to be flooded with the surplus of fuel wood. It is moreover pointed out that a more exhaustive utilization of the national sources of fuel would alleviate unemployment. French calculations show that the national supplies of fuel wood would suffice for 120,000 lorries running on producer gas, and if exploited, would save a million tons of petrol that have to be imported.

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FORESTRY IN CONGRESS

By G. H. COLLINGWOOD

Appropriations for the Departments of
Agriculture and Interior, together with the
bill for continuing the Civilian Conservation
Corps remain uncompleted with strong in-
dications that one or more may not be com-
pleted before the beginning of the new fiscal
year on July 1.

The Agricultural Appropriation bill, H. R.
6523, has been in the hands of the Senate
and House conference committees since May
17, while H. R. 6958, making appropriations
for the Department of Interior, has been
awaiting consideration by the Senate sub-
committee on Agricultural Appropriations
since it passed the House and was referred
to the Senate Appropriations Committee on
May 24.

On June 18, Senator Adams introduced
S. 2681 to authorize the construction of a
thirteen mile tunnel through the Rocky
Mountain National Park in Colorado to di-
vert Colorado River water into Grand Lake
on the west slope, thence under the National
Park, and into the Big Thompson River on
the east side of the Continental Divide for
irrigation of some 200,000 acres of agricul-
tural lands in the valley of the Platte River,
and for the development of electric power.
Publication of the Bureau of Reclamation's
plan and cost estimate for this project as a
Senate document was requested by Senator
Adams of Colorado, on June 15.

A similar project estimated to cost about
\$25,000,000 was inserted in the Interior
Appropriation bill a year ago, but defeated
after vigorous opposition by several national
forestry and conservation associations. The
American Forestry Association holds that
all National Parks should be free from com-
mercial or economic exploitation, and that
Congressional approval of this tunnel
through the National Park will create a
precedent which will make easier the com-
mercial invasion of other parks.

A new version of H. R. 6551, to continue
the Civilian Conservation Corps, awaits ac-
tion by a conference committee appointed
from the two Houses. This bill would continue
the CCC for three years after July 1, 1937,
"for the purpose of providing employment
and training for citizenship for youthful
citizens of the United States who are un-
employed and in need of employment." The
provision that at least ten hours each week
might be devoted to general education and
vocational training was omitted, and Section
5 reinserted, providing for the appointment
of all civilian personnel of the Corps in
accordance with civil service laws and regu-
lations by June 30, 1938. In carrying this
out, all present civilian employees of the
CCC would take non-competitive civil service
examinations before that date, and those
whose rating is unsatisfactory would be
dropped before the close of the year. Vigor-
ous debate on this section to take political
patronage out of the CCC is expected on
the floor of both houses.

Authority for the Federal Government
through the Secretary of the Interior to
purchase some 7,500 acres of sugar pine
forest land adjoining the Yosemite National
Park in California was assured on June 9
with passage of H. R. 5394 by a roll call

vote of 184 to 127. A similar bill, S. 1791,
passed the Senate on May 26.

A committee amendment was defeated
which proposed to authorize the Federal
Government to pay Tuolumne, Mariposa, and
Merced Counties where these lands are lo-
cated "an amount equal to the taxes that
would have been produced by such lands had
they remained in private ownership." Dur-
ing the four years that the standing timber
might remain uncut, this is roughly esti-
mated to be \$48,000, but considerably larger
if continued for fifteen or twenty years.

No valuation is given the timberland, but
the Secretary of the Interior is authorized
"to acquire, by purchase when purchasable
at prices deemed by him reasonable, other-
wise by condemnation." Representative
Englebright of California, who opposed the
bill after the section authorizing federal
payments to the counties in lieu of taxes
had been eliminated, declared during the
discussion, "We are going to pay a lumber
company which is glad and willing to sell
\$3,000,000 of relief funds to make this pur-
chase," while Representative McGroarty of
California, sponsor of the bill, estimated
\$2,000,000 as a fair appraisal of the prop-
erty.

Extensive hearings on H. R. 5858, to
establish sustained yield management on the
O and C forest lands of western Oregon
and to provide for reimbursing the coun-
ties, closed on June 4. Assistant Forester
L. F. Kneipp and others testified that most
satisfactory results would be achieved by
transferring the more than 2,000,000 acres
of alternate sections of forest land to the
Department of Agriculture for administra-
tion in conjunction with adjoining National
Forest lands. In reply, Assistant Solicitor
Rufus Poole of the Department of the In-
terior proposed for consideration of the
committee a bill which would transfer the
Forest Service with all of its personnel,
equipment, and appropriations to the De-
partment of the Interior.

No action was taken on the proposal, but
it is a by-product of the growing pressure
from Administrative sources to push forward
the reorganization of the federal depart-
ments and change the name of the Depart-
ment of the Interior to the Department of
Conservation.

Various projects for controlling flood wa-
ters of the Ohio and Mississippi Rivers have
been the subject of daily hearings before
Representative Whittington's House Com-
mittee on Flood Control since June 7, and
promise to continue through most of the
month.

Hearings on S. 2555 for the creation of
seven regional conservation authorities, ex-
tending from coast to coast, and formulated
after the manner of the TVA are scheduled
by the Senate Committee on Agriculture
and Forestry beginning June 21. Introduc-
tion of this bill and H. R. 7365 in the
House was coincident with a special message
from the President describing a far-reach-
ing program of flood control and soil con-
servation, plus wider expansion of the pub-
lic ownership power program.

CONSERVATION CALENDAR

Important bills in Congress with action from
May 14 to June 18

BILLS ENACTED

H. R. 6730—WOODRUM—Making appropriations for the fiscal year ending June 30, 1937, and prior fiscal years, to provide supplemental appropriations for the fiscal years ending June 30, 1937, and June 30, 1938. Passed House April 28, 1937. Passed Senate May 12, 1937. Public Law No. 121.

S. 1124—SCHWELLENBACH—Authorizing the Director of the Census to collect and publish statistics of red-cedar shingles. Passed Senate May 3, 1937. Passed House May 17, 1937. Public Law No. 112.

APPROPRIATIONS

H. R. 6523—CANNON—Making appropriations for the Department of Agriculture and the Farm Credit Administration for the fiscal year ending June 30, 1938. Passed House April 23, 1937. Passed Senate amended May 13, 1937. Sent to Conference May 17, 1937.

H. R. 6958—TAYLOR—Making appropriations for the Department of the Interior for the fiscal year ending June 30, 1938. Passed House May 20, 1937. Referred to Senate Committee on Appropriations May 24, 1937.

H. R. 7319—BEITER (H. R. 4791—BEITER)—To continue the Federal Emergency Administration of Public Works for two years and to appropriate and reappropriate funds for continuing its activities. Introduced June 1, 1937. Referred to the Committee on Appropriations.

H. J. Res. 361—Making appropriations for relief purposes. Passed House June 1, 1937. Reported with amendments (Report No. 717) June 14, 1937. Now under consideration.

CONSERVATION

S. 2555—NORRIS (H. R. 7365—MANSFIELD)—To provide for the creation of conservation authorities, and for other purposes. Introduced June 3, 1937. Referred to the Committee on Agriculture and Forestry.

H. R. 7394—JONES—To authorize projects for the conservation of water in the Great Plains. Introduced June 4, 1937. Referred to the Committee on Agriculture.

GOVERNMENTAL FUNCTIONS

H. R. 6551—CONNERY—To establish a Civilian Conservation Corps, and for other purposes. Passed House May 12, 1937. Passed Senate amended May 20, 1937. Sent to Conference May 20, 1937. Conference report presented in House June 7, 1937.

LANDS

H. R. 5858—DEROUEN—Relating to the re-vested Oregon and California Railroad and reconveyed Coos Bay Wagon Road Grant lands situated in Oregon. Com-

mittee on Public Lands concluded open hearings on June 7, 1937.

NATIONAL FORESTS

S. 2450—WHEELER—To aid in the development of certain mineralized areas located within the exterior boundaries of the National Forests. Introduced May 19, 1937. Referred to the Committee on Public Lands and Surveys.

NATIONAL PARKS

S. 1791—MCADOO (H. R. 5394—MCGROARTY)—To provide for the acquisition of certain lands for and the addition thereof to the Yosemite National Park in California. Passed Senate May 26, 1937. H. R. 5394 passed House June 9, 1937.

S. 2513—BYRD—To provide for the operation of the recreational facilities within the Chopawamsic recreation demonstration project near Dumfries, Virginia, by the Secretary of the Interior through the National Park Service. Introduced May 28, 1937. Referred to the Committee on Public Lands and Surveys.

H. R. 5472—WEAVER—To authorize the exchange of certain lands within the Great Smoky Mountains National Park for lands within the Cherokee Indian Reservation, North Carolina, and for other purposes. Reported with amendment (Report No. 937) by the Committee on Public Lands June 7, 1937.

H. R. 7264—MURDOCK (Arizona)—To revise the boundary of the Grand Canyon National Park in the State of Arizona; to abolish the Grand Canyon National Monument; to restore certain lands to the public domain. Introduced May 27, 1937. Referred to the Committee on Public Lands.

MISCELLANEOUS

H. R. 4277—GREEVER—To provide for the extension of certain prospecting permits. Reported without amendment (Report No. 934) by the Committee on Mines and Mining June 3, 1937. Passed House June 9, 1937.

H. R. 6150—GREEN—For the completion of the construction of the Atlantic-Gulf Ship Canal across Florida. Reported with amendment (Report No. 950) by the Committee on Rivers and Harbors June 8, 1937.

WATER AND STREAM CONTROL

S. 2681—ADAMS—To authorize the construction of the Grand Lake-Big Thompson transmountain water diversion project as a federal reclamation project. Introduced June 18, 1937, and referred to the Committee on Irrigation and Reclamation.



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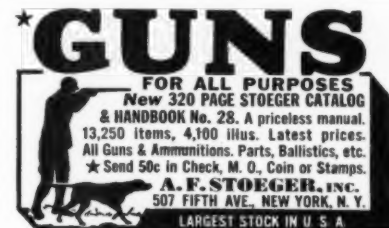
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WHO'S WHO

Among the Authors in this Issue

LEO A. LUTTRINGER, JR. (*Backwoods Trailin'*), who specializes in wildlife conservation, knows Penn's Woods, and writes of them with an understanding born of familiarity. With the Game Commission for fifteen years, he has made scientific studies of great value to the State. Here he tells a most interesting story of the way a modern need is being met in the adaptation of the trailer to the needs of the hunter and fisherman of today. For in Penn's Woods, where game is abundant once more and sport plentiful, due to the intensive protective methods and the highly efficient system of its game organization work, the movable motor camp is a real boon to the legitimate sportsman.



Leo Luttringer, Jr.

and sport plentiful, due to the intensive protective methods and the highly efficient system of its game organization work, the movable motor camp is a real boon to the legitimate sportsman.

JOHN B. WOODS (*State Opportunity in Forest Conservation*) is Forester of The National Lumber Manufacturers Association. For long one of our leading foresters, Mr. Woods is nationally and internationally known. In 1934 he was chosen by the Lumber Code Authority and the N.L.M.A. to head up the work in the development and administration of the forestry program under Article X of the Code—and its expanding amendments—a program designed to promote conservation and the sustained yield of forest resources. In this article he deals with the much discussed *quid pro quo* principle and its application to a national program of industrial forestry.



John B. Woods



Ben East

the passing of the grayling,—Michigan's great game fish,—and his protest that such things can be as well worth reading.

BEN EAST (*A Gallant Fish Passes*) writes of the out-of-doors — especially Michigan's out-of-doors. It is his job as well as his avocation, for he is nature editor of a chain of Michigan papers looping down from Grand Rapids and up to Flint. A native of the State, he is a conservationist of the first water. His story of

NICHOLAS VON FELSOVANYI (*The Forest Drives Your Car*) is a forest engineer of distinction in Austria, Chief of the Department for Timber Utilization there. With the University of Geneva as his educational background, he returned to Vienna on the completion of his course and entered the works of a mechanical engineering concern. On the inception of the Timber Utilization Branch of C.I.B. work, Dr. von Felsovanyi took charge and much of its success is attributable to his ability as an organizer. He tells here of a new outlet abroad for forest products, in the name of economy, through the use of wood gas in the propulsion of motor-driven vehicles. Who knows what possibilities its development may offer America in terms of new markets and economy?



Nicholas von Felsovanyi

DONALD STEVENSON (*China's Trees of the Future*) lives in China and is connected with the College of Agriculture of Lingnan University at Canton, in charge of forestry instruction. A native of New York, he was graduated from Yale in 1925 and then took philosophy and theology at Yale, Edinburgh and Oxford. Ordained for the ministry in 1930, he went to China to teach. Having become intensely interested in the rural and land use problems of China, Mr. Stevenson returned to America in 1933 to take his master's degree in forestry from Yale in 1935. For a short time he acted as assistant regional forester for the Northeast for the Resettlement Administration and then went back to China in 1936, where he is now devoting his time chiefly to rural reconstruction projects there in the districts around Canton.



Donald Stevenson

G. H. COLLINGWOOD (*Slash Pine*) is Forester for The American Forestry Association at the Washington headquarters. This is the forty-sixth in his series of articles on native trees, eventually to appear in book form.

THE COVER is a moving picture of what may be seen (and taken) along the shores of Bow Lake, in Alberta's beautiful Canadian Rockies. "Profile, please!"—and the young deer poses readily for its photograph. From the studio of H. Armstrong Roberts.

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● Discing plowed fire lines with Cletrac and 7 foot disc—Huron National Forest, Michigan. Photo by U. S. Forest Service.

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